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Gleanings in Bee Culture



Vol. L.

December, 1922.

No. 12

Better Way to Garden

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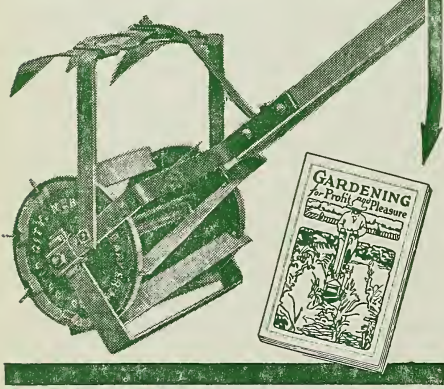
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(See next page.)

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WACO, TEXAS. _____ 192__

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No discount from the above.

As stationery would appear on Blue Bond.

THE A. I. ROOT COMPANY, MEDINA, OHIO.

CONTENTS

DECEMBER, 1922

Honey Markets	754-755
Editorials	759-761
Hubam as a Farm Crop.....	Edw. A. Winkler 762-764
Can the Combs Be Saved?.....	J. C. Hutzelman, M. D. 764-766
Newspaper Advertising.....	C. H. Wolfe 766-768
Cost of Honey Production.....	Arthur C. Miller 768-770
The Co-operative Movement.....	William H. Wolford 770-771
Shade for the Beehives.....	A. I. Root 772
Digging Beeswax from a Mine.....	W. W. Barnhill 772-773
Dealers and Speculators.....	J. Skovbo 773
Beekeeping in Australia.....	H. W. Raggatt 773
Nectar from Velvet Bean.....	
.....R. B. Willson, J. Clay Dickman, W. C. Barnard	774
A Handy Super-Lifter.....	H. H. Root 774-775
Honey Bird of East Africa.....	Jas A. Brown 776
Stingless Bees of Mexico.....	Robert Hardin 776-777
Can a Woman Keep Bees?.....	E. A. Kirkpatrick 777-778
Honey Producers' League.....	S. B. Fracker 778-779
Wintering in Damp Cellars.....	Walter Harmer 779
Entrances Clogged—Why?.....	J. L. Byer 779
Peddling at Wholesale Prices.....	Geo. M. Thomson 779
Siftings.....	J. E. Crane 780
Seeing California from a Roadster.....	Constance Root Boyden 781-782
Beekeeping as a Side Line.....	Grace Allen 783-784
From North, East, West and South.....	785-791
Heads of Grain from Different Fields.....	792-795
Gleaned by Asking.....	Geo. S. Demuth 796-797
Bees, Men and Things.....	798
Just News	799
Our Homes.....	A. I. Root 800-803

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THE A. I. ROOT COMPANY, Publishers, Medina, Ohio

Editorial Staff

Geo. S. Demuth and E. R. Root	A. I. Root	H. H. Root	H. G. Rowe
Editors	Editor Home Dept.	Assistant Editor	M'n'g Editor

Q *Money Saved
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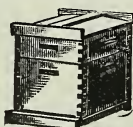
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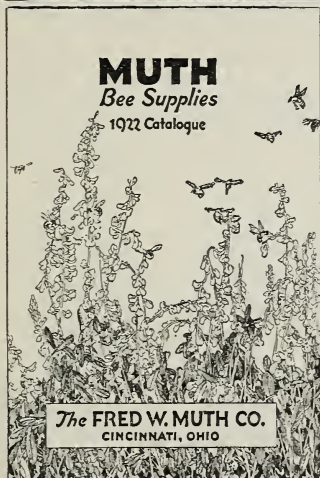
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Send a list of your requirements to us.

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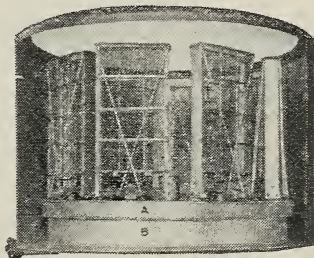
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HONEY MARKETS

U. S. GOVERNMENT MARKET REPORTS.

Information from Producing Areas (First Half of November).

CALIFORNIA POINTS.—Southern California—Colonies in good condition. Market stronger and prices advancing since passage of tariff. Some small beekeepers selling rapidly, but larger factors holding for higher prices. Carlots range per lb. for outside shipment, white orange 10½-11c, white sage 9-9½c, light amber sage 7-7½c, light amber alfalfa 6¾-7c. Some sales to near-by dealers of white orange low as 9¼c per lb. and of white sage at 8-8½c. In central California alfalfa crop said to have been only a fraction of normal, due in part to army worms. Northern California.—Bees being moved into almond and prune orchards for winter. Fruit-growers offering high as \$1.50 per colony for pollinating bloom. Star thistle honey generally sold at 8c, some 9c per lb. For dark honey beekeepers asking 6c. Brisk demand for 5 and 10 lb. pails.

INTERMOUNTAIN REGION.—Colonies generally packed, and in good shape for winter. Extracted honey moving slowly in carlots, and at wide range in prices. As carlot buyers have not been purchasing heavily, it is likely that carlot sales may be extended over a longer period than ordinarily prevails. Several carlot sales of white alfalfa and sweet clover reported in 60-lb. cans at 8¼-8½c per lb. Other carlot sales white extracted, for distant shipment and in sales to near-by firms, reported at 6¾-7½c per lb. Extracted honey has moved fairly well in local small-lot sales. Comb honey in carlots is said to have moved unusually well. In some sections comb honey is largely cleaned up. Carlot sales best No. 1 white reported at \$3.75 per 24-section case; other carlot sales white comb, to near-by dealers, reported low as \$2.60-3.00 per case. Average yellow beeswax ranges 20-25c per lb. cash.

ARIZONA-NEW MEXICO.—Drought in New Mexico said to have been instrumental in causing very light crop. In Arizona a slow fall flow gave enough surplus to extract some honey and still leave winter stores. Sales of several cars extracted reported at 6¼-6½c per lb. Most honey being held for better prices.

PACIFIC NORTHWEST.—Colonies have ample stores and bees except where spray poison and American foul brood have weakened them. Spray poisoning estimated to have caused loss of one-third of the crop in Yakima Valley. Honey moving rapidly from hands of beekeepers. Some large producers have crop over half sold. Carlot sales light amber reported at 8¼c and 9c per lb. Plenty of inquiries reported at 8c per lb.

EAST CENTRAL AND NORTH CENTRAL STATES.—Stores generally ample, but some colonies reported weak in bees. Late rains have helped clover, which in most areas is now in good condition for next year. Demand somewhat improved, but sales still light. Amber supply said to be light. Carlot basis for extracted white clover ranges 9-10½c per lb., with case lots selling at 12-15c. Retail prices in 5-lb. cans range 15-25c per lb. Aster reported selling in 60-lb. cans at 10c per lb. Few small sales white comb reported at \$4.80-5.50 per 24-section case.

PLAINS AREA.—Most colonies strong in bees and with plenty of stores. Recent rains helping prospects for next year. Carlots white clover selling 10-10½c per lb., with less than carlots moving at 11-11½c per lb. Few small inferior lots reported sold low as 8c per lb. Small lots white comb sold at \$4.80 per 24-section case.

NORTHEASTERN STATES.—Except where fall flow has been too light, colonies are in good condition for winter. Warm fall weather has caused bees to consume stores heavily. Demand better and some beekeepers already sold out. Low prices received for honey are said to have prompted many beekeepers to dispose of their hives. Wide range in prices reported for white extracted in 60-lb. cans—from 8½c to 12½c per lb.; mostly around 10-10½c for large lots. Sales of buckwheat reported at 7-9c per lb. One carlot sale of white comb reported at \$4.75 per case; other carlots No. 1 white quoted at \$3.85-4.25 per case,

with smaller lots ranging \$4.00-5.50 per 24-section case, and buckwheat comb from \$2.50 to \$3.84 per case.

Import and Export Figures.

Secured through Bureau of Foreign and Domestic Commerce. Figures indicate pounds.

	August	Sept. 1-21
Honey from foreign countries..	154,860	106,296
Honey from Porto Rico.....	290,055	161,270
Hawaii	132,095	111,363

Total brought into U. S. 577,000 378,929
Honey exported from the U. S. 71,131 199,612
Honey exported during same pe-

riod last year.....	190,340	371,807
Beeswax imported	339,836	150,109
From Porto Rico and Hawaii...	12,303	3,697
Beeswax exported	4,617	1,885

Telegraphic Reports from Important Markets.

BOSTON.—Since last report 327 cases from Vermont by express and 150 cases from California by freight arrived. Fairly good demand for extracted, but light demand for comb. California light amber sage weaker, other lines steady. Extracted: Receivers' sales to confectioners and bottlers in 5-package lots or more, per lb., Porto Rico, amber, 8½-9c. California, white sage, 14-16c, light amber sage 10½-12c. Comb: Sales to retailers, New York, 24-section cases white clover, \$6.00-6.50; carton stock, \$6.50-7.00. Vermont, carton stock, 24-section cases, white clover, best, \$6.50-7.00; 20-section cases white clover, best, heavy, \$5.50-6.00; light, \$4.50-5.00.

CHICAGO.—Since last report 1 car Arizona, 1 car Illinois, 3 cars Colorado, 1 car California, 1 car Texas, 6,500 lbs. Iowa, 8,500 lbs. Wisconsin and 900 lbs. Nebraska arrived. Extracted: Supplies increasing. Demand and movement fair, market barely steady. Sales to bottlers, bakers and confectionery manufacturers, Colorado, alfalfa and mixed sweet clover and alfalfa white 10-10½c, few 11c; light amber, 8-9c. California, sage, white, 10½c; few 11c. Comb: Supplies moderate. Demand and movement good. Sales to retailers in 24-section cases, Colorado, sweet clover and mixed sweet clover and alfalfa No. 1 heavy, \$4.00-4.25; No. 2, \$3.50-3.75. Wisconsin, Michigan and Illinois, alfalfa and white clover mixed No. 1 heavy, \$3.75-4.00; few, \$4.25; No. 2, \$3.00-3.50. Beeswax: Receipts moderate. Demand and movement fair, market steady. Sales to wholesale druggists and laundry supply houses, Colorado, California and Arizona, light 31-32c; dark, 26-29c. Central America, light, 28-30c; dark, 23-26c, some low as 17c.

KANSAS CITY.—Since last report 1 car Arizona arrived but diverted before being unloaded. Supplies moderate. Demand and movement moderate, market steady. Sales to jobbers: Extracted: Colorado, water white sweet clover, 12c. Arizona, light amber alfalfa, 7¾-8c. Comb: 24-section cases Colorado, white alfalfa fancy, \$4.25; alfalfa and clover white No. 1, \$4.00; Missouri, white clover, No. 1, \$4.50.

PHILADELPHIA.—Extracted: Arrivals light, and with a light demand the market has been dull. Only a few sales reported to bakers of Porto Rico light amber at 83c per gal. Beeswax: Supplies rather light, and although the demand has been light the market has strengthened slightly. Sales to manufacturers, per lb., Chili, light, 28-29c; Brazil, light, 27-28c; Africa, dark, 24-25c.

ST. LOUIS.—Arrivals since last report include 1 car Colorado, 2 cars California. Supplies moderate. Demand and movement moderate, market steady. Practically no jobbing sales; all direct to retailers. Comb: Colorado, white sweet clover, in 24-section cases, \$5.00. Extracted: California and Missouri, light amber, 8½-10c. Beeswax: No arrivals reported during past month. Market still dull and practically unchanged. Ungraded average country run ranges 26-26½c per lb. to farmers.

NEW YORK.—Domestic receipts limited. Practically no foreign receipts. Demand limited, market steady. Slightly better feeling. Extracted: Spot sales to jobbers, wholesalers, confectioners, bakers and bottlers, domestic, per lb., California, light amber alfalfa, 7-8c, few 8½c, white sage 10½-11½c, white orange 12-13c, light amber sage

8½-9½c, extra light amber sage 9-10c. Inter-mountain region, white sweet clover, 9½-10c. New York, buckwheat 8-9c. Porto Rico, refined 75-85c per gal. Beeswax: Foreign receipts limited. Demand good, market strong. Spot sales to wholesalers, manufacturers and drug trade, per lb., Chili, light 27-29c, Brazil 26-28c, West Indies, dark 20-21c. Africa, dark 23-24c, few 25c.

The A. I. Root Company's Quotation.

Since our last quotation we have purchased only a few small lots of water-white extracted white clover honey from local producers, at 10½c per lb., f. o. b. shipping point. At present we have sufficient stocks of both comb and extracted honey on hand, or contracted for, to take care of our immediate needs.

The Opinions of Honey Producers Themselves as Reported to Gleanings in Bee Culture.

Early in November we sent to actual honey producers the following questions:

1. What is the present condition of the colonies in your locality compared with normal as to (a) Number and age of bees? (b) Stores for winter? Give answer in per cent.
2. How does the number of colonies now in your locality compare with a five-year average? Give answer in per cent.
3. What is the present condition of the honey plants for next season in your locality as compared with normal? Give answer in per cent.
4. What per cent of the honey produced in your

locality has already left the hands of the producers?

5. At what prices is honey being sold in large lots (carload or entire crop) at the producers's station? (a) Extracted honey per pound? (b) Comb honey, fancy and No. 1, per case?
6. What are prices to grocers in lots of one to five cases? (a) Extracted honey in 5-lb. pails or other retail packages? (b) Comb honey, fancy or No. 1 per case?
7. How is honey now moving on the market in your locality? Give answer in one word, as slow, fair or rapid.

State.	Reported by:	Colony Cond.	No.	Crop	In large lots.	To Grocers.	Move-		
		Bees.	Stores.	Colonies.	Plants.	Sold.	Ext. Comb.	Ext. Comb.	ment.
Ala.	J. M. Cutts.....	100..	75..	120..	25..	90..	..	..	..
Ark.	J. V. Ormond.....	75..	100..	100..	75..	90..	..	..	Fair
Ark.	J. Johnson.....	75..	100..	100..	75..	85..	\$5.40..	85..	\$5.00.. Slow
B. C.	W. J. Sheppard.....	100..	100..	200..	100..	35..	\$20..	1.25..	.. Fair
Cal.	L. L. Andrews.....	90..	90..	115..	100..	95..	.08..	85..	.. Fair
Cal.	G. Larinan.....	100..	100..	..	..	40..	.08..	..	.. Fair
Cal.	M. H. Mendleson.....	100..	100..	105..	100..	90..	..	..	.. Fair
Cal.	M. A. Saylor.....	100..	100..	100..	100..	75..	.09..	3.60..	75.. 4.00.. Fair
Cal.	M. C. Richter.....	90..	90..	80..	100..	80..	..	1.25..	.. Fair
Col.	J. A. Green.....	100..	95..	110..	100..	25..	..	65..	.. Fair
Col.	B. W. Hopper.....	100..	100..	100..	90..	95..	.09..	3.75..	60.. 4.00.. Fair
Conn.	A. Latham.....	110..	100..	150..	110..	80..	..	6.50..	.. Fair
Fla.	C. C. Cook.....	100..	125..	200..	100..	30..	.08..	75..	.. Fair
Fla.	H. Hewitt.....	100..	100..	120..	100..	50..	.08..	65..	.. Fair
Fla.	W. Lamkin.....	100..	100..	300..	100..	40..	.08..	65..	.. Fair
Ga.	J. J. Wilder.....	110..	120..	130..	100..	95..	.09..	4.25..	75.. 4.75.. Fair
Ill.	A. L. Kildow.....	100..	100..	115..	25..	15..	.10..	4.00..	75.. 5.00.. Fair
Ill.	T. C. Johnson.....	100..	100..	100..	100..	50..	..	4.90..	90.. 5.00.. Fair
Ind.	J. Smith.....	100..	100..	125..	100..	50..	..	..	.. Fair
Ind.	E. S. Miller.....	100..	100..	100..	90..	25..	..	80..	4.80.. Fair
Iowa.	E. G. Brown.....	100..	80..	110..	100..	65..	.10..	75..	4.80.. Rapid
Iowa.	F. Coverdale.....	125..	120..	110..	100..	60..	..	4.00..	60.. 4.25.. Fair
Iowa.	W. S. Pangburn.....	100..	100..	100..	100..	25..	.10..	5.00..	80.. Slow
Kan.	J. A. Nininger.....	100..	100..	110..	90..	30..	..	75..	5.00.. Fair
Ky.	P. C. Ward.....	100..	100..	100..	75..	90..	..	..	.. Fair
La.	E. C. Davis.....	100..	100..	100..	100..	50..	.09..	65..	5.50.. Fair
Me.	O. B. Griffin.....	95..	95..	90..	100..	50..	..	7.20..	.. Fair
Md.	S. G. Crocker, Jr.....	90..	80..	100..	75..	..	..	5.00..	1.00.. 5.50.. Slow
Mass.	O. M. Smith.....	100..	100..	100..	100..	10..	..	1.10..	5.50.. Slow
Mich.	I. D. Bartlett.....	100..	50..	100..	100..	50..	.10..	75..	4.25.. Fair
Mich.	L. S. Griggs.....	100..	50..	125..	100..	60..	.10..	4.80..	75.. 4.80.. Fair
Mich.	F. Markham.....	100..	90..	150..	50..	75..	.11..	80..	.. Fair
Nev.	E. G. Norton.....	90..	90..	90..	80..	50..	.07..	50..	.. Slow
N. Y.	Adams & Myers.....	75..	75..	150..	125..	50..	..	95..	5.75.. Fair
N. Y.	F. W. Lesser.....	100..	100..	110..	125..	40..	..	..	4.80.. Fair
N. Y.	R. B. Willson.....	100..	75..	..	75..	25..	.09..	4.50..	85.. 4.50.. Slow
N. C.	W. J. Martin.....	95..	100..	100..	100..	90..	.09..	4.50..	1.25.. 5.40.. Fair
N. C.	C. L. Sams.....	100..	100..	100..	100..	85..	..	1.00..	5.50.. Fair
Ohio.	E. G. Baldwin.....	100..	100..	100..	95..	35..	..	3.50..	1.00.. 5.50.. Fair
Ohio.	R. D. Hiatt.....	80..	80..	100..	90..	90..	..	1.00..	5.50.. Fair
Ohio.	F. Leiminger.....	100..	75..	100..	75..	15..	.12..	60..	..
Ohio.	J. F. Moore.....	90..	70..	100..	90..	40..	..	80..	4.30.. Fair
Okla.	J. Heuelsen.....	80..	100..	90..	100..	80..	..	75..	.. Fair
Okla.	C. F. Stiles.....	80..	90..	100..	80..	60..	..	70..	4.75.. Fair
Ore.	E. J. Ladd.....	90..	100..	80..	100..	..	..	55..	3.75.. Fair
Ore.	H. A. Scullen.....	100..	100..	100..	100..	50..	.10..	55..	.. Slow
Pa.	D. C. Gilham.....	100..	75..	110..	75..	10..	..	1.05..	7.20.. Slow
Pa.	G. H. Rea.....	100..	100..	100..	100..	50..	..	80..	5.50.. Fair
S. C.	A. S. Conradi.....	20..	20..	10..	100..	90..	..	..	..
S. D.	L. A. Syverud.....	80..	90..	90..	90..	40..	..	65..	.. Fair
Tenn.	J. M. Buchanan.....	100..	75..	100..	90..	95..	..	70..	.. Fair
Tex.	T. A. Bowden.....	75..	80..	90..	..	75..	..	50..	..
Tex.	J. N. Mayes.....	75..	80..	40..	80..	95..	.09..	..	..
Utah.	M. A. Gill.....	100..	80..	120..	90..	80..	.07..	3.50..	45.. 4.00.. Fair
Utah.	N. E. Miller.....	80..	90..	..	85..	65..	.08..	..	..
Vt.	J. E. Crane.....	100..	100..	125..	100..	60..	..	5.00..	1.25.. 8.40.. Slow
Va.	T. C. Asher.....	90..	95..	90..	100..	90..	..	1.10..	6.00.. Fair
Wash.	W. L. Cox.....	100..	100..	80..	95..	25..	..	60..	.. Fair
Wash.	G. W. R. Saxton.....	100..	100..	100..	100..	25..	.09..	..	..
Wash.	G. W. York.....	90..	95..	85..	75..	75..	.08..	3.75..	65.. 4.30.. Fair
W. Va.	T. K. Massie.....	100..	80..	90..	100..	95..	..	..	..
Wis.	N. E. France.....	..	100..	80..	75..	60..	..	65..	5.00.. Fair
Wis.	E. Hassinger, Jr.....	100..	100..	105..	100..	50..	.11..	85..	.. Fair
Wis.	H. F. Wilson.....	100..	90..	100..	90..	60..	.12..	4.50..	7.50.. Fair

For Real Success You Should Buy Woodman's Inner Overcoat Hives

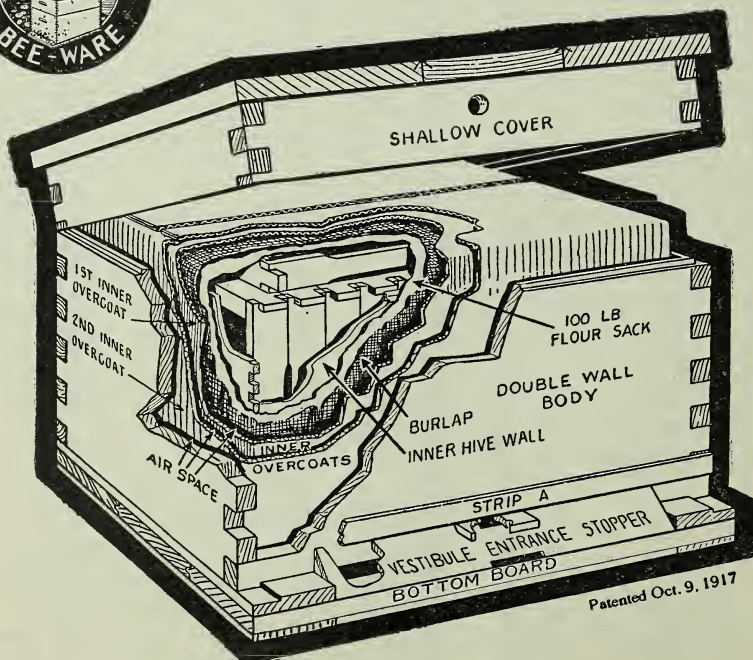
BEE CAUSE:

1. **Protected Bees work day and night.** It has been shown by careful observation that maintaining a temperature of 98 degrees permits comb-building to go on both day and night. The bees will thus devote more daylight time to gathering honey.
2. **Larger Honey Crops are assured.** The bees are enabled to rear brood earlier in the spring, with no danger of chilled brood on account of cold snaps. One bee in March is worth one hundred in July.
3. **You will practically eliminate winter losses.** With your colonies in normal condition (that is, with plenty of good stores, a young queen and young bees) you will be able to winter practically 100%.
4. **The Inner Overcoat Hive will last a lifetime,** as the outer hive walls are the same thickness as in the single-wall hive. In other words, WOODMAN Inner Overcoat Hives are a lifetime investment—not an expense.
5. **Out of-door Wintered Bees have many advantages over cellar-wintered bees.** They do not spring-dwindle and are stronger at the opening of honey flow.
6. **Insures Close-up protection.** A person may have any amount of blankets fastened up to the wall of his room and still freeze to death if left in the center of the room without close-up protection or insulation. The close-up protection in the Inner Overcoat Hive is what does the trick.

5 one-story regular depth hives, \$25.00: Jumbo depth, \$27.50

Special circular on WOODMAN'S Protection Inner Overcoat Hive, showing 10 large illustrations, sent on request.

A. G. WOODMAN COMPANY, *Sole Makers*
238 Scribner Ave., N. W., Grand Rapids, Mich.



Patented Oct. 9, 1917

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AT LESS COST.

Supplies

A SUPERIOR QUALITY
AT LESS COST.

(MADE BY THE DIAMOND MATCH COMPANY)

WE ARE MAKING SPECIAL REDUCTIONS IN PRICES WHICH
ARE GOOD FOR NOVEMBER AND DECEMBER SHIPMENT
ONLY. WE ARE SURE BEEKEEPERS WILL PROFIT
BY TAKING ADVANTAGE OF THIS REDUCTION.

One-Story Complete Dovetailed Hive

With metal telescope cover, inner cover, reversible bottom,
Hoffman frames, nails, rabbets.

Standard Size.

Crate of five, K. D., 8-frame.....\$11.40
Crate of five, K. D., 10-frame..... 11.95

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With Hoffman frames, nails, rabbets.

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Hoffman Frames

Standard size100, \$4.70; 500, \$22.00
Shallow100, 3.90; 500, 19.00
Jumbo100, 5.20; 500, 25.00

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SPECIAL PRICES!

SPECIAL PRICES!

Medium5 lbs., 65c lb.; 50 lbs., 60c lb.
Thin Super.....5 lbs., 70c lb.; 50 lbs., 65c lb.

Comb Honey Supers

For 4x5x1 $\frac{3}{4}$ sections including section-holders, fence-
separators, springs, tins and nails.

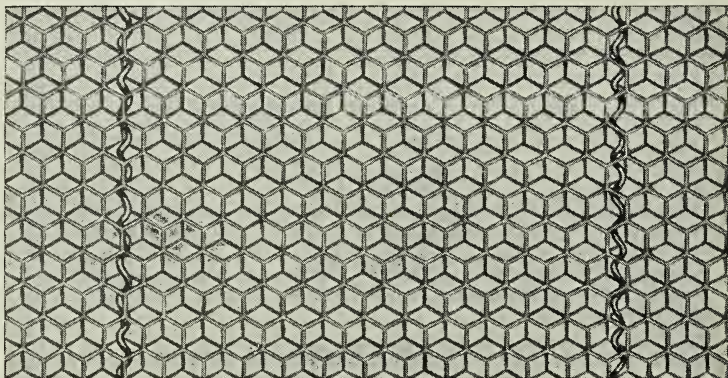
Crate of five, K. D., 8-frame.....\$5.00
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HOFFMAN & HAUCK, INC.

WOODHAVEN, NEW YORK

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Reinforced with Radiating Shoulders of Strength



Patented

Makes Non-Sag All-Worker Comb

Wired Foundation

A YEAR OF USE completely upholds the claims which were made for Dadant's Wired Foundation, and beekeepers everywhere are enthusiastic in the great improvement which shows in their combs.

EVERY USER AN ADVERTISER.—Ask your neighbor who has tried Dadant's Wired Foundation how he likes it and we will need to say no more to you. His advertisement will be sufficient.

DADANT'S WIRED FOUNDATION may be used in new-style split bottom-bar frames or in the old-style one-piece bottom-bar frames with equal satisfaction. It is also adaptable to any size and style of brood or extracting frame.

COSTS NO MORE.—Since Dadant's Wired Foundation reduces the cost and labor of wiring, its extra price of three cents per pound above the catalog prices of old-style foundation is thus more than returned to the beekeeper.

ASK FOR SAMPLES.—A small mailing sample sent free on request. **Special Offer:** A sample of seven sheets, for either split bottom-bar or old-style one-piece bottom-bar frames will be sent, postpaid, to any address in the United States for \$1. Specify size desired. Only one sample to a person.

BEEWAX.—We need large quantities of beeswax and are paying good prices now. Ship to us at Hamilton, Ill., or Keokuk, Ia., or drop us a card and we will quote f. o. b. here or f. o. b. your own station, as you desire.

Wired Foundation is sold by all distributors of Lewis "Beeware" and Dadant's Foundation. Send them your orders.

Dadant & Sons, Hamilton, Illinois

GLEANINGS IN BEE CULTURE

DECEMBER, 1922

EDITORIAL

ON January 1, 1923, it will be exactly 50 years since A. I. Root sent out the first issue of *Gleanings in Bee Culture*, the little eight-page journal which so rapidly grew into a great bee journal. On that date we shall issue a large anniversary number to celebrate the 50th birthday of this journal. This large anniversary number will be crowded with exceptionally interesting and valuable matter and handsomely illustrated to measure up to the occasion.



Gleanings is 50 Years Old.

Culture, the little eight-page journal

FORMERLY many experiments were tried in this country in an effort to disinfect



Disinfecting Combs of American Foul Brood.

combs containing American foul brood,

without destroying them, by fumigation or by spraying with some disinfectant, but none of these were successful. Recently, however, Dr. J. C. Hutzelman has worked out a method for disinfecting combs of American foul brood that looks more promising. Dr. Hutzelman has written up his experiments for this journal, and his article appears in this issue on page 764.

JUDGING from the number of inquiries received at this office, there will be considerable



Honey in Automobile Radiators.

honey used in automobile radiators this winter to prevent

freezing. We have made some tests to determine the freezing point of mixtures of honey and water of different strengths, which agree in general with the results obtained by Joseph E. Palmer as reported on page 794 of this issue. For ordinary winter temperatures not lower than 12° to 15° F. equal parts of thick well-ripened honey and water should be enough to prevent freezing, but for temperatures around zero or below not less than two parts of honey to one part water should be used.

It would not be safe to use sugar syrup or molasses in these proportions, for a sugar (sucrose) solution of equal concentration does not depress the freezing point as much as honey owing to its different molecular construction.

IT sometimes happens that the cheapest things are much better and more service-



The Simplest and Cheapest Winter Feeder.

able than those which are more expensive. It is certainly true that the cheapest feeder for

late fall feeding, and one that is as serviceable as the very best feeder ever invented, is the ordinary ten-pound honey-pail with a friction top. Such pails can usually be bought for a few cents each. To convert one of these pails into a feeder, all that is necessary is to punch 30 holes, a scant $\frac{1}{8}$ of an inch in diameter in the cover. It is important that there be no more than 30 holes, and that they be no larger than a scant $\frac{1}{8}$ of an inch. It is much better to punch the holes from the inside out. This will leave the ragged or burr edge of the holes projecting, affording a convenient foothold for the bees while they are filling up preparatory to storing in the combs below. If there are too many holes, or if the holes are too large, the feeder will be inclined to drip, thus causing robbing. This is shown in Fig. 4 on page 795. The pail at the right in the same figure has 30 holes a scant $\frac{1}{8}$ of an inch in diameter.

THE honey market thus far has been a hard one especially for those having large lots.



Honey Market Conditions.

Carload buyers are still buying on the "hand to mouth" plan, and will per-

haps continue to do so for some time. The consumer demand did not begin in earnest until a month or more later than usual, which unfortunately caused considerable price-cutting in an effort to force the honey upon an unwilling market. We are still importing large quantities of honey and exporting but little. (See page 754). According to the figures compiled by the Department of Agriculture the yield per colony this year was 53.8 pounds as against 44.2 last year. While these figures look discouraging, the figures submitted by our market reporters indicate that 58.5 per cent of the 1922 crop had been sold up to about December 10 as against 66 per cent last year. Most small lots have already been cleaned up, and, if sufficient effort is put forth from now on, the 1922 crop should be well cleaned up before new honey appears next year.

IT is well known that bees are able to modify sugar syrup so that it does not so readily granulate after being stored in the combs. Formerly the



Do Bees Invert Thick Sugar Syrup if Fed Late in the Fall?

books and journals devoted to beekeeping advised that feeding for winter, when necessary, be done early in order that the bees be given a chance to properly invert the sugar syrup to prevent its crystallization after it is stored in the comb. During more recent years beekeepers in the North have learned the great value of postponing feeding for winter until after the bees can no longer gather nectar from the flowers. When feeding is done late the sugar syrup is stored below the honey, thus insuring that the bees will use it first during the winter, thus giving them the sugar syrup while they are confined to their hives, and leaving the honey stores until spring when the bees are able to fly at frequent intervals. In the far north this is an important consideration in either outdoor or cellar wintering since the quality of stores must be the very best to insure successful wintering year after year.

When feeding is postponed until October the syrup should be made much heavier than for earlier feeding to avoid the necessity of the bees' ripening it. It has been generally supposed that the bees are not able to modify this thick syrup to any extent, and for this reason tartaric acid is used to prevent crystallization. In our November issue, page 714, J. E. Crane describes a simple experiment to prove that the bees do modify heavy syrup even when fed late in the season.

In our experimental work here we have made some surprising discoveries along this line. Heavy syrups made of two parts of sugar and one part of water, as well as some made of $2\frac{1}{4}$ parts of sugar to one part of water, were fed to the bees and the next day some of this stored syrup was taken from the combs and the degree of inversion measured by means of the polariscope. Even in this short time the syrup was modified so that the reading was 52 instead of 68, which was the reading before the syrup was fed. After the syrup had been in the combs for a week the reading was 38, thus showing that the invertase which the bees added to the syrup continues to modify the sugar syrup even at the ordinary hive temperature during the fall. In these experiments with sugar syrup to which no acid has been added, a large percentage of the syrup was crystallized within a few days after feeding. If it were possible to postpone crystallization for a few weeks after being fed, it is probable that the invertase added by the bees would modify the syrup sufficiently to prevent crystallization, but all of our experiments thus far have resulted in entirely too much crystallization before the invertase has had an opportunity to do its work.

One of the surprising things which we learned from our experiments is that when the syrup is fed while hot there is more crystallization in the combs a few days later than when it is fed cold. On measuring the degree of inversion in samples taken of syrup which was fed hot and samples taken of syrup which was fed cold it was found that inversion was carried to a greater degree in that which was fed cold. The density of the syrup also has much to do with the degree of inversion, and we are now busy with experiments to find out more about this and also about the different degrees of inversion resulting from different methods of feeding. We expect to be able to announce some of these results in our January issue.



ON page 780 of this issue J. E. Crane calls attention to the wastefulness of arranging



How Moisture Escapes from the Hive.

the hive so that the moisture is carried out by ventilation. Fortunately it is not necessary to pass a current of air through the beehive during the winter to carry out the moisture, for the moisture can leave the hive by diffusion. It is not even necessary for the air within the hive to move about in order to have the water vapor leave the hive by diffusion. If a jar containing air heavily laden with moisture is placed in a dry atmosphere, the moisture will escape from the jar until the relative humidity of the air within the jar is equal to that outside even though there is no movement of air into or out of the jar. This is because the vapor pressure is greater in the moisture-laden air than in the dry air, which causes the vapor to escape until a balance of vapor pressure outside and inside the jar has been reached. This is on the same principle as that of perfume being released in one corner of a room in which the air is not in motion. Within a short time the perfume will have permeated the air within the room without the necessity of the air moving in order to carry it about. It will thus be seen that the diffusion of gases is quite different from the mixing of gases by ventilation. Of course, the process is much more rapid when the air is stirred, but when thinking of the escape of moisture from the beehive it is well to remember that the moisture can escape by diffusion, if the hive is properly arranged, regardless of any movement of the air. In fact, the water vapor is diffused into adjacent space whether air is present or not.

This diffusion can take place through porous material. For instance, if a glass tumbler filled with air heavily laden with moisture is covered with a piece of blotting paper and is placed in a room containing dry air of the same temperature, there would be no movement of air to or from the tumbler because the air pressure above and be-

low the blotting paper is the same; but the vapor pressure in the tumbler being much greater than the vapor pressure outside, water vapor will pass through the blotting paper until the vapor pressure within the tumbler balances that outside. In a similar manner moisture can escape from a beehive through a porous covering or even through the walls of the hive without the necessity of changing the air in the hive.

Much has been said about upward ventilation in the beehive during winter to carry out the moisture. Some have even advocated providing openings in the top of the hive to permit moisture to escape. When such openings are provided not only does the moisture escape but the warm air escapes also, since a current is set up through the hive because of the difference in the temperature of the air within the hive and that outside. Except possibly in the extreme north well-packed colonies of bees that are wintering well do not need any other avenue for the escape of moisture than that of the entrance. Where it gets so cold that the inner walls of a well-packed hive become chilled below the dew-point, thus causing condensation on the walls of the hive, a porous covering may be advisable. The great danger here is in having the porous covering so loose that currents of air take place through it. The covering should be sufficiently compact so that there can be no upward ventilation. Some beekeepers put a quilt over the frames and cover this with a sheet of newspaper to prevent air currents. Such an arrangement with an abundance of packing above should retain the warm air, and at the same time permit the diffusion of moisture sufficient to keep the hive dry.



IN a damp cellar the difference between the vapor pressure inside the hive and



**Moisture in the
Bee Cellar.**

within the cellar is much less than that in a dry cellar. The escape of moisture from the hive will therefore be much slower in a damp cellar than in a dry one. In this issue, on page 779, Walter Harmer describes conditions sometimes found in damp cellars and tells how this may be overcome by upward ventilation in the hive. This trouble can also be overcome to a large extent by keeping a higher temperature in the cellar or by better ventilation of the cellar. It should be noted that raising the cellar temperature a few degrees not only greatly increases the capacity of the air within the cellar to take up moisture, but also causes the bees to generate less heat, which means that they consume less stores and therefore give off less moisture. In this way the escape of moisture from the hive is hastened, and at the same time the generation of moisture within the hive is decreased. Of course, if the

temperature is raised too high, the bees may become more active because of the higher temperature than they were before when they were compelled to generate sufficient heat to keep the cluster warm. The proper adjustment of the cellar temperature is one which must be worked out for each individual cellar not only according to the cellar itself but according to the number and activity of the bees which it contains.



BEEKEEPERS have learned to associate wet and mouldy combs with poor winter-



**Is Moisture Within
the Hives Detri-
mental to the Bees?**

ing, and have thus been led to consider moisture within the hive as exceedingly detrimental to the bees during winter. It may be well to raise the question as to whether moisture is the cause of poor wintering or the effect of poor wintering. Good wintering demands that the bees be quiet during the winter period. If conditions are such that they can pass the winter in the greatest possible degree of quiescence they of course consume the smallest amount of stores, and therefore give off the smallest amount of moisture. Another colony in the same apiary and arranged in the same way, because of poor stores or some other cause, may be much more active, which means that they must consume more stores and therefore give off more moisture. In the one case the moisture may escape from the hive as fast as it is given off, thus leaving the hive and combs dry; while in the other case the moisture may be generated faster than it can escape from the hive, resulting in wet and mouldy combs. Anything that causes the bees to become more active and consume more stores, of course, increases the amount of moisture they give off. Bees in a cold cellar, being compelled to generate more heat to keep up the temperature of the cluster, will therefore give off more moisture than if the cellar temperature is more nearly correct. In the same way, colonies that are exposed outside are compelled to generate more heat and thus give off more moisture than those well protected from prevailing winds and well packed. Poor stores, coupled with a lack of opportunity for cleansing flights during the winter, always result in greater activity and therefore an increase in the amount of moisture given off. It may be that in his effort to keep the interior of the hive dry during the winter the beekeeper is simply removing a symptom of poor wintering and is not removing the cause. There can be no doubt that moisture condensed within the hive and running down over the combs is detrimental, but if the cause of the excess of activity is removed, there should be no condensation within the hive and moisture in the form of vapor probably does no harm.

IN my article in the November issue I endeavored to give most of the advantages and value of Hubam to the beekeeper. In this article I tell some of the advantages and value of Hubam to the farmer.

HUBAM AS A FARM CROP

*This Great Fertilizer of the Soil
Saves a Year in Crop Rotation*

By Edw. A. Winkler

Hubam here this year, seeded with a cover crop on sweet well-inoculated thoroughly prepared soil and clipped off with the binder when the grain was

cut, made even a better growth than Hubam seeded alone, some fields standing up to the shoulders in eight weeks after the clipping at harvest and maturing seed.

It took nerve to begin with seed at \$10 per pound, and at last spread out to more than 1000 acres of good farm land. But the farmers around here in this county, who once turned a deaf ear to the new annual legume, are now moved to an inquiry which is likely not to end short of placing Hubam in every part of this county.

Its Great Fertilizing Value.

The late Dr. C. G. Hopkins of Illinois State University at Urbana, Illinois, emphasized the fact that 6.4 tons of dry sweet clover matter furnish as much humus-forming material and as much nitrogen as would be furnished by 25 tons of the average farm manure.

Nitrate nitrogen experiments, conducted in 1919 at the State University and printed in Bulletin No. 233, give the important fact that approximately one ton (water-free basis) of spring growth of sweet clover tops (which would be fall growth of Hubam), together with the roots and fall residues, furnished as much nitrate as 19.8 tons of average farm manure.

Hubam planted broadcast yields over four tons of dry matter per acre, equal to nearly 80 tons of farm manure, if plowed under.

The following table from the findings of the Iowa Station will show more clearly the advantage of Hubam over all other le-

Hubam Saves a Year in Crop Rotation.

It has been thoroughly demonstrated here this year that the principal argument in favor of Hubam against biennial sweet clover is that Hubam can be plowed under successfully in the fall of the same year in which it is seeded in grain or can be pastured, used for a seed crop, cut for silage or even made into very palatable legume hay ranking very closely to alfalfa, and then plowed under in this same year.

Size of the Root System.

It has been the contending opinion of some agricultural journals that Hubam has not as large a root system as the biennial.

This year I had one field of 15 acres of Hubam alone broadcast on one side of a fence, and on the opposite side were 10 acres of Grundy County biennial. It was very noticeable that the stocks and roots of Hubam were almost as large as those of the biennial field. The Grundy County is an early-blooming and harvesting type usually cut for seed about July 1. Just next to this field, on the same kind of soil, were eight acres of Hubam in oats. It seems that the rooting of Hubam is larger following grain, the stock being clipped off with the grain, and the Hubam having the whole field to itself seems to grow sturdier and with a longer and larger root. The Hubam roots in the oat field were much larger than those of the biennial.

TABLE I—COMPARATIVE YIELDS OF HUBAM AND OTHER LEGUMES FOLLOWING OATS—1921.

Legume.	Yield (tons per acre)	Av. length plants June 29 (inches).	Av. length plants Oct. 4 (inches).
Hubam Clover	2.07	25	42
Bi. Wht. Swt. Clover	1.85	18	22
Bi. Yel. Swt. Clover	1.56	18	22
Alfalfa	1.14	7	19
Medium Red Clover .....	.95	6	12
Mammoth Clover .....	.92	6	10
Alsike Clover	Poor stand	4	8

*TABLE II—COMPARISON OF NITROGEN RETURNED TO SOIL BY HUBAM AND OTHER LEGUMES.

Pounds water-free material per acre.		Per cent of roots to total weight.	Per cent nitrogen water- free basis.		Lbs. nitrogen per A. Water-free basis.		Total.
Roots	Leaves and Stems.		Leaves	and Stems.	Roots.	stems.	
Hubam	1664.0	30.54	2.48	2.43	41.25	91.95	133.20
Bi. Wht.	1451.3	30.03	2.86	2.90	41.51	98.07	139.58
Med. Red	827.8	32.28	2.29	3.43	18.96	59.57	78.53

*Detailed report of experimental methods used is not included because of lack of space. It has been mimeographed and is available for agronomists and others interested.

TABLE III—ANALYSES OF HUBAM AND BIENNIAL WHITE SWEET CLOVER.

	Per cent protein.	Per cent nitrogen- free extract.	Per cent crude fiber.	Per cent ether extract (crude fat).	Per cent ash.
Hubam Clover	14.32	39.06	33.76	1.79	5.27
Biennial Wht. Swt. Clover ..	12.94	32.11	38.31	1.16	5.59

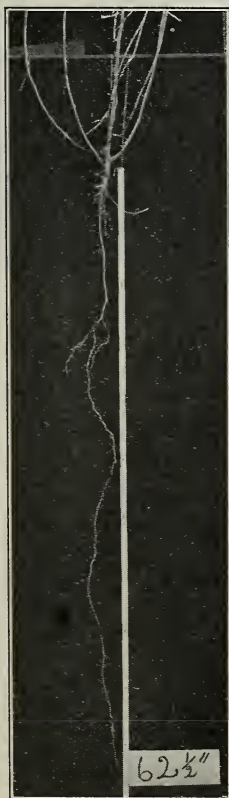
gumes. These are referred to in the Iowa circular No. 76.

Advantages for Fall Plowing.

Owing to the impracticability of plowing biennial sweet clover under in the fall and the necessity of leaving the second year's spring growth to make a large growth before plowing under in order to destroy thoroughly all the plants, and eliminate the volunteer trouble, which brings plowing close up to corn-planting time, Hubam, which should be turned under in the fall when the bloom has blown and the seed pods are all green, is sure to become the universally used and foremost of legumes adapted to almost all climates and soils.

Roots Over Five Feet Long.

Owing to its deep-rooting system, in proof of which I am enclosing a picture, this legume, which gets its nitrogen from the air and deposits it in the soil instead of taking it from the soil, bids fair to become the universal soil-builder. When we can convince those objectors who still believe sweet clover to be an obnoxious weed, and overcome their prejudice against it, pointing out that their land is sour and depleted and that they are not getting



Root system of Hubam measuring 62½ inches in length.

as large crops as their neighbors who have been planting clovers and rotating crops, we shall begin to get our farms back to the fertility they possessed 100 years ago.

This root was dug up from a field of Hubam sown broadcast late last spring alone. Another root was dug up in a field of Hubam following winter rye, the root measuring 52 inches. We did not get all of either of the roots.

The opinion that Hubam does not root as large and deep as the biennial may never be entirely expelled, but many are taking a different view on this subject after looking at some of the roots that were dug up this fall.

The agitation

for the growing of Hubam, the ultimate purpose being soil-enrichment, has led men to realize more than ever before the necessity of some such legume as Hubam for the maintenance of the fertility of our soils.

Beekeepers should not overlook the advisability of inducing farmers in their locality to plant alsike clover also. Will County is one of the two counties in this state that together produce approximately 80 per cent of the alsike seed raised in this



Hulling Hubam. The honeybee is the most important pollinator of sweet clover and is therefore an essential factor in seed production.

state. Farmers near my apiaries have harvested as high as \$96 per acre of alsike seed.

It is also well to keep in touch with the yields made near your bees, in order to inform prospective growers, and also, if at all possible, to furnish bees in that locality to pollinate the bloom. One should also keep in touch with those who have seed to sell.

Alsike, of course, cannot be compared favorably with Hubam as a soil-builder on account of its short-rooting system, but it is of great value as an early honey plant where white clover is scarce. There is no bloat with Hubam or with alfalfa and other legumes. Stock take to it readily.

I had a field of Hubam this year seeded in oats. After the oats were harvested a good crop of Hubam seed was harvested, and, had the farmer wished to cut the Hubam the second time instead of plowing it under, a crop of Hubam hay of approximately 1½ to 2 tons per acre could have been harvested. Such fields will be very rare and are due entirely to the type of soil and early planting. This field was planted on April 19.

Many farmers have disced up their Hubam stubble and drilled in winter wheat, others have drilled it in without discing. Enough Hubam seed had shattered off to insure a thick stand of Hubam following their winter grain next summer.

Value of Sweet Clover Silage and Straw.

The following table, taken from Farmers' Bulletin No. 820, will give some idea as to the valuation of the sweet clover straw piles:

From this it will be seen that sweet clover compares favorably in food elements with corn silage. The straw, of course, contains less protein and carbohydrates than when

TABLE III—COMPOSITION OF SWEET CLOVER SILAGE AND WELL-MATURED CORN SILAGE.

Kind of silage.	Number of analyses.	Constituents (per cent)					
		Water.	Ash.	Crude protein.	Fiber.	Carbohydrates.	Fat.
						Nitrogen-free extract.	
White sweet:							
First year's growth ¹	1	73.7	1.73	3.17		20.8	0.65
First crop, second season ²	1	73.7	2.57	2.06	8.08	12.32	1.27
Straw ²	3	73.7	1.19	2.70	13.59	8.33	.50
Corn, well matured ³	121	73.7	1.70	2.10	6.30	15.40	.80

¹Analyzed by the Illinois Agricultural Experiment Station. ²Analyzed by the Bureau of Chemistry.

³Analyses compiled by Henry and Morrison.

the entire plant is used, as most of the leaves shatter from sweet clover before it is cut for seed.

Next year we will see quite a few farmers cutting Hubam and corn and mixing the two together in their silage.

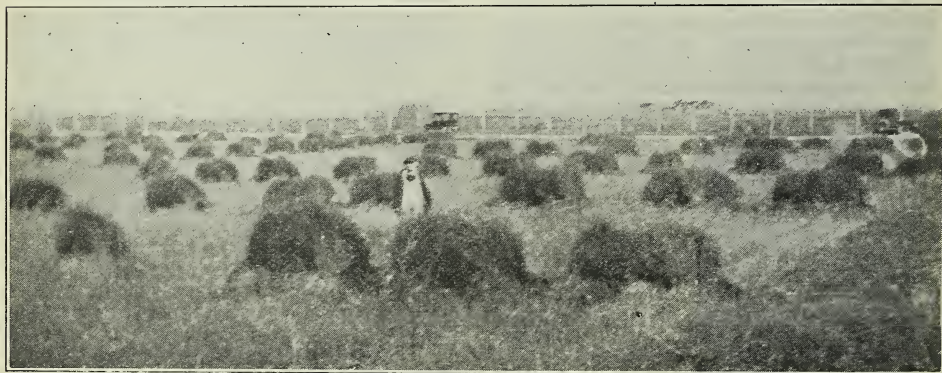
When this is done approximately two-thirds of the total corn acreage, which would be cut for silage, may be permitted to mature. This mixture will make much better silage than corn silage alone.

Beekeepers will do well to write to the Division of Publications, Washington, D. C.,

for all Farmers' Bulletins pertaining to sweet clover, such as "Sweet Clover Utilization," No. 820; "Growing the Crop," No. 797; "Sweet Clover Harvesting and Threshing the Seed Crop," and especially Dept. Circular No. 169.

At the annual meeting of the Chicago Northwestern Beekeepers' meeting in Chicago, December 4 and 5, I will give a demonstration in soil-testing, showing the difference in soil before growing Hubam and after growing it.

Joliet, Ill.



Hubam cut for seed. Note the large amount of straw on this field, indicating the rank growth. The soil is greatly enriched by the fixation of nitrogen, and the bees are enriched by the abundant supply of nectar.



THE beekeeper who has not had experience with American foul brood has missed a fight with a dangerous enemy. On account of the fact that

this disease is due to a germ, the apiarist is dealing with an unseen enemy; that is to say, this enemy can not be seen with the unaided eye. We see only the destruction wrought by this enemy. If we conceive that perhaps fifty millions of these germs would not make a mass as big as an ordinary pinhead, and that if just a few of these germs find their way into the food of a baby bee, this baby bee is almost sure to die, showing the usual symptoms of American

CAN THE COMBS BE SAVED

New Treatment for American Foul Brood by Immersion in Disinfectant Solution

By J. C. Hutzelman, M. D.

foul brood. If germs were as big as wax moths, the beekeeper would know as soon as he opened a hive, that his bees had American foul brood.

Then he would stop right there to take precautions against spreading the disease to his other colonies. But germs are mighty small things. Consequently, the beekeeper, particularly the man inexperienced in American foul brood, is frequently caught with this disease of several months' standing, scattered throughout his apiary.

If I should find in going over my bees that a colony showed a single dead larva that looked like one dead from American

foul brood, I would mark the location of this larva and watch that colony until sure whether the disease is present or not.

Experiments Began Early in 1921.

At the end of the season of 1920, I had several colonies showing advanced stages of American foul brood. The combs were as perfect as are to be had, so I hesitated to destroy them in the usual way of getting rid of American foul-brood combs. The destruction of a nice lot of combs, because they were occupied by bees afflicted with foul brood, has always appealed to me as a big loss. These combs were stored away in a place safe from robber bees. During the early spring of 1921, I started experimenting with a number of disinfectants which were dissolved in water. I came to the conclusion that a disinfectant dissolved in water showed little hopes of success, because the disinfection of a honeycomb containing dead larvae due to American foul brood presents a peculiar difficulty.

Difficulties in Way of Disinfecting Combs.

In the first place, such a honeycomb as ordinarily occurs in the brood-nest usually contains more or less honey. However, this honey, by extracting, is easily disposed of. After removing the honey, the brood-comb consists of beeswax, which, together with the wood surrounding the comb, may be more or less covered with propolis. This resinous substance may be present in quantities ranging from lumps, half the size of a hen's egg, to mere thin stains. Numerous cells of the comb may be filled with pollen, which is mostly a protein substance. Most important of all are the cells containing dead larvae in all the different stages characteristic of American foul brood. These cells may be sealed or unsealed. The larvae may be hard dried-down scales adhering firmly to the cell walls, or they may be the soft glue-like ropy masses usually described.

To sum up, after removing the honey from a diseased brood-comb, the comb consists of beeswax, propolis, cells filled with pollen and cells containing dead larvae.

Success in sterilizing a honeycomb made up of the above constituents will only be attained with a substance that has the property of penetrating these substances. The fact is established that any part of the interior of a beehive infected with American foul brood is liable to be covered by disease germs. Bees are continuously carrying bits of propolis and other matter, as is shown by the travel-stains on new comb. As a result, there may be countless numbers of germs buried in masses of propolis, or worked into the wax that goes to form a comb. Hence come the failures that are due to disinfecting with gases, as formaldehyde gas; likewise, watery disinfectants, because neither beeswax nor propolis are penetrated by water in a reasonable length of time.

Substance Must Penetrate Beeswax, Propolis, Pollen and Dead Larvae.

Thus, the problem of disinfecting a comb

containing American foul brood resolves itself into finding a substance that will penetrate beeswax, propolis, pollen and the dead larvae, in sealed or unsealed cells either in the form of dried scales or the ropy glue-like state. Also, this substance must not destroy the wood of the frame, the wires supporting the comb, or the comb itself. None of the disinfectant must remain as a residue to endanger the bees which are to occupy it. The substance must be cheap enough to make it practical for commercial use.

There are many substances which will penetrate beeswax and propolis, as gasoline, benzol, carbon bisulphide, carbon tetrachloride, alcohol, etc. But none of these alone has any value as a disinfectant for American foul brood.

One of the best substances for destroying the germs of American foul brood has been found by the Bureau of Entomology, Washington, D. C., to be formaldehyde. (Bulletin No. 809, American Foul Brood, by G. F. White.) The germs when placed in a strong solution of formaldehyde, are dead after a few hours. Fortunately, it has no damaging effect on honeycomb, wire or wood; nor does it leave a residue on the combs after drying. Now, if this be mixed with some substance that will penetrate beeswax and propolis, an ideal disinfectant will be obtained.

The number of substances with which formalin will mix that are capable of penetrating beeswax and propolis are very few, only one being worthy of consideration. This one substance is alcohol.

Alcohol containing 20 per cent of formalin is a liquid of low surface tension. This property makes it capable of promptly filling all empty space in the honeycomb.

In treating a comb containing diseased cells of American foul brood, with alcohol containing 20 per cent of formalin, one may observe the following points:

1. Beeswax absorbs the solution; consequently, it swells up, as is shown by the distortion of the cell walls of a comb that has been soaked at least 24 hours.

2. Propolis is completely penetrated, as it is made semi-liquid by the solution, because propolis is a resinous substance.

3. Cells filled with pollen are penetrated, because after drying, these masses of pollen, due to shrinkage, may be shaken, occasionally, out of the cells.

4. Diseased larvae are completely disinfect, because after drying they, in a hardened condition, can readily be removed from the cell wall. Before drying, the characteristic ropiness is absent. Sealed cells containing diseased larvae are found to be in the same condition. The larvae are no longer repulsive to bees, as the ropy glue-like remains are hardened, and can easily be removed by the bees, as so much inert matter.

5. A surface wet with honey is disinfected.

because honey is miscible with the disinfectant.

6. The liquid fills every cell immediately, provided the combs, while held in their natural position, are inclined from side to side.

Result of Tests With Diseased Combs.

Combs, which had been treated by this method, were sent to the Bureau of Entomology. The following report was received:

"Cultures were made from the dried scales and also from granular material from sealed cells. After subculturing and incubation for four or five days, no evidence of spore germination could be demonstrated.

"A. P. Sturtevant,

"Assistant Apiculturist."

By soaking combs 48 hours in the purest grade of alcohol, containing 20 per cent of formalin, honeycomb is made just as valuable as it was before infected. On account of the violent poisons, which adhere to beeswax, that are used in making completely denatured alcohol, this kind of alcohol can not be used.

I have had more than 200 standard Langstroth combs, which two years ago were infected, pass through two seasons with no return of disease. Another 200 combs have passed through this last season with no return of infection.

These experiments have been carried out in my apiary of 150 colonies. This month of October, by most careful examination, I am unable to find a single colony infected

by American foul brood. In other words, I have thus far had 100 per cent success by using alcoholic formalin as above described.

Failure to have colonies free from foul brood, after putting combs disinfected by this method in those colonies, will be due to one or more of the following reasons:

1. Carrying infectious material from a diseased hive, either directly or indirectly, into the healthy colony. The beekeeper should make sure that his hands and tools are free from foul-brood germs, when working with healthy colonies.

2. Permitting bees to obtain infected honey from a diseased hive while being examined or shaken in the usual way for foul brood.

3. Storeroom for diseased combs is not bee-tight; consequently, bees are robbing diseased honey.

4. Bees are robbing infectious honey from sources unknown to the beekeeper. This may be a neighbor's diseased hive, a weak diseased colony in a bee-tree, or a discarded honey container whose contents came from a diseased colony.

In conclusion, I wish to extend due credit to the Bee Culture Office, Bureau of Entomology, Washington, D. C., and to The A. I. Root Company, for the assistance each has given, particularly for the tests they have made.

Glendale, Ohio.



IF every beekeeper could speak to the whole world face to face each morning and tell the inhabitants thereof the merits of honey as a food, and of the desirability of his own honey in particular, there would be no need of other advertising, because there is no selling agency which quite equals the personal contact of the producer with the possible consumer of his product.

Such a course admittedly being impossible, we must devise other methods of reaching the buyer if we wish to reach more than our immediate neighbors and friends. Roadside signs, exhibits at the county fair, and displays in store windows and food shows are most frequently used to get the attention of honey consumers, and may be made productive of excellent results. The average beekeeper, however, can use the columns of his local newspaper to good advantage in his honey-selling campaign in addition to all other media.

There are two chief difficulties that prevent most beekeepers from using newspaper

NEWSPAPER ADVERTISING

How Local Newspapers Can be Used to Best Advantage in Selling Honey

By C. H. Wolfe

advertising a so profitably as they might. One is their unwillingness to spend enough money to make a creditable showing; the other, a lack of knowledge of

the best method of using their newspaper advertising appropriation.

Kind of Newspaper Advertising Best Suited for Beekeepers.

In these days of whole and half-page ads, such space as a beekeeper would be justified in buying is apt to be entirely overshadowed by the big advertiser. For that reason I have never found the ordinary space or display advertisement very profitable. I have tried "locals" or short readers, and while they do bring results, their expense, if used as liberally as they should be, mounts up pretty fast. In city papers, where the rate for readers and display space is high, honey advertisers find the use of the want columns brings them the best results for the outlay involved. The want column of your home weekly or daily can be tried out at slight cost also, and will bring sales enough to make it pay.

In retailing my own honey crop, I spend \$100 or more each season in advertising in my local newspaper. I live in a town of 12,000 with a large country population tributary. I have secured the best results by the use of what is generally known in newspaper offices as a "space reader"; that is, not less than four inches of space, one column wide, set in the regular news-size type, with no display lines except the heading, which is set similar in style to the ordinary news headline of the paper. Newspapers sometimes charge extra for advertisements so set, but the slight additional cost is justified by the returns. Position is important. Ask your publisher to give you good position. Don't ask that your ad be spread all over the front page or surrounded on all sides by reading matter, for he'll smile at you. Be content to have the first ad in the column, or in the column next to reading matter on a page containing home news. He'll give you that, usually, especially if your ad is as much as six inches long.

In my own advertising I generally use a six-inch space. I like to have the heading occupy just a single line, with letters about half an inch tall—some plain letter resembling that in their regular news story heads. The idea is to give my ad the general appearance of a news story. In the headline I always use the word "honey" in some combination, as, "Say, Honey!" "Your Honey," "My Honey," "Fancy Honey," "Oh, Honey," on the theory that those likely to be interested in honey will "spot" such a headline at sight. Here is one that appeared recently in a local paper.

YOUR HONEY

I want to sell it to you.

You won't find better at any price.

Still selling for Six Dollars a can (60 lbs.) for Standard No. 1 light amber extracted.

A good grade of melted, strained honey from broken combs, for Fifty-five per can. Not quite as choice as my No. 1, but good pure honey just the same.

A 10-pound pail of the best, water white alfalfa honey for \$1.50. Come to the Honey Shop at 720 Eleventh street and see and taste. Money back on any purchase that is not 100 per cent satisfactory.

C. H. WOLFE, Beekeeper.

Sign of the Honey Shop. Phone Gr. 365. Free deliveries every day within the city.

Having attracted the attention of the reader, I try to give him some real information in the reading matter that follows. I have honey to sell, so I tell him something

about my honey—the kind, the quality, how I produce and prepare for market, size of container and price. I stress the quality of my product because I believe in my honey, and I know the conditions under which it is produced. I know that my honey is better than much that is on the market, and I try to convince the honey user of the fact. But I don't run down the other fellow. I stick to the truth and write just as I would speak to my customer if he stood before me. I don't try to be eloquent or grandiloquent—just plain everyday beekeeper talk, I find, will reach nearly everybody.

I never run the same ad more than twice. Changing every time is better; tell the same story in different words. Usually I do not run an ad every issue in the daily. Two or three times a week will cost slightly more per issue, but not so much as an insertion every day, and I find the results equally good. But I find that during the main honey season, a material spurt in sales follows each ad, and a corresponding drop when my ads are left out for a week or more. Such a



The right kind of advertising in local newspapers brings the customers to the honey-house, thus making the route between producer and consumer the shortest possible one.

space reader as I use may be had in the average village newspaper with 1000 or more circulation for 20 to 30 cents per running inch per issue. If my home paper were published weekly instead of daily I should have an ad in every issue from August to December.

Bee Stories in Honey Advertisements.

Last August I tried the experiment of running a series of short articles in our daily paper about bees and honey and honey production. In each story I told some interesting feature of beekeeping. One time, how honey is gathered, stored and ripened. Another, how the extracting is done, and

why extracted honey is cheaper in price than comb honey. Other stories dealt with the bees themselves, how they swarm, how they guard their hive against robbers, how they keep warm in winter, etc. There is such a wealth of material to choose from that I found it hard to stop. At the end of each story I ran my honey shop prices, using about two inches of space for that purpose. I paid for these stories at regular space rates, and they were read generally by the public, and brought me scores of new customers who took the pains to speak of the articles. In fact they created more discussion about bees and honey than any advertising I ever did. Often while they were running I would be called over the phone by some reader to settle some dispute about

bee behavior. Two months after the close of the series I find their effects still reflected in my honey sales and inquiries.

One effect of continued advertising of my honey is the call for my honey rather than just "any" honey, in the stores. Sometimes the merchants aren't fair, and that has its drawbacks—but that is another story.

In conclusion I wish not to be regarded as an oracle in honey advertising. Some of my experiments in that line have fallen flat. But on the whole my newspaper advertising has paid and is paying me well, and, if intelligently done, similar advertising, I am convinced, can be made to pay other beekeepers.

Greeley, Colorado.



One of C. H. Wolfe's out-apiaries, near Greeley, Colo. The honey is sold locally by carefully planned advertising in local papers.



YOU ask me to tell the cost of honey production and of how I get at it. Why pick on me? Just because I have been indiscreet enough in the past to make some assertions about it and to quote a few figures, it does not follow that I know. But perhaps I can say something that will help toward a solution of an important and troublesome problem.

The question is often asked, "Does beekeeping pay?" and there are as many different answers as listeners. But how can anyone give a fair and clear answer if the cost of honey production is unknown? And if we do not know what it costs us to produce a pound of honey, how can we tell what to charge for it? And yet, year after year, we sell our crop at what is offered, and, so long as we make both ends meet, we seem content.

I remember the late Rambler's reply to the query as to whether he could make both

COST OF HONEY PRODUCTION

*An Accurate Accounting of Costs
is One of the First Requisites in any
Business*

By Arthur C. Miller

ends meet when producing honey.

"Oh," was his nonchalant reply, "I gave that up long ago and now have one end meat and the other vegetables."

Some Difficulties in Figuring Costs.

Perhaps the chief difficulty usually experienced in figuring costs is the mixing-in of selling costs with production costs, and separation of these two items is particularly difficult when one retails most of the crop. Another item which usually puzzles one when trying to figure costs is placing an estimate on the value of one's labor; and this is complicated when one keeps bees as a "side line" and puts into the work a minimum part of his time. A high-salaried man with much leisure from his profession hesitates to charge the honey business with the same price per hour which his profession yields, saying it is otherwise unprofitable time or that the salary goes on anyway and

the returns from the honey are "all velvet," but that is poor reasoning.

Then, there is the man in some line of farming with much non-productive time on his hands, so he devotes it to bees, gets a fair crop, sells it for what he can get and calls it "all profit." Finally, there is the professional beekeeper who has much money invested in it, devotes all the warm season to producing, much of the rest of the year to selling, and the balance to putting his outfit into shape for the active or producing season. How shall he figure his costs? Shall he charge against the honey only the time devoted to producing it or also the time taken in selling, and if these two, when does the intermediate or preparatory time get paid for? Shall he figure the different sorts of work at different prices per day or all alike?

Then, he must figure the interest on his investment, insurance, taxes, depreciation and upkeep. The plot thickens and many a man I have heard exclaim: "Oh, pshaw, I can't bother with all that. I pay my expenses and what is left over is profit." Is it? Not by any means. There comes a year when no small part of the equipment has to be replaced, a new auto purchased, lower prices received for the crop and he has to draw on his bank account. Now what is he to live on if not his bank reserve, if he is so fortunate as to have one. Suppose the next year is bad and there is no crop, and having used up each year most of the cash left after paying the year's expenses, what is he to do? Go to the bank and borrow? The banker at once wants collateral, but if the would-be borrower has none and wants to borrow on his "business," the banker promptly wants to know if it pays. What does it pay? How much is invested in it? And asks a lot more questions which not one beekeeper in perhaps a thousand can ever guess at.

While you are guessing, let me tell you how I have tried to work it out.

How to Make the Inventory.

First, an inventory must be taken. Make a list of every sort of implement you use in the business. This is far from easy and by the time you have finished, you will understand why the store clerks hate and dread "taking stock."

When the lists are complete, go over them painstakingly, rigorously cross off every item of uncertain or no value. Then set a price on what is left. Place these as conservatively as you can and, if you are not sure what they should be, discuss them with any well-posted friend you can find. After a couple of years or so, you will be able to do this quickly and more to your satisfaction. The idea is to get an estimate of their real worth, i. e., what they are worth to you for use in the business, a sort of compromise between what they would cost you to replace and what they would sell for at forced sale.

Each year thereafter, when the inventory is all figured, deduct or "charge off" 10 per cent for depreciation. In the case of the automobile, deduct 20 per cent.

Theoretically, at the end of 10 years, your outfit would stand at zero, but there are always replacements so that the zero seldom arrives.

Valuation of the Bees in the Inventory.

Then there is the question of valuing the bees, perhaps the most difficult part of the inventory. How much is a big colony to be valued at? How much a weak one? How much a medium? What is "medium" and what is "strong?" How much more is a pure Italian colony worth than a hybrid one? Suppose the pure Italian one is a little below medium in strength and the hybrid one is away above normal size for the season?

I gave it up. Life was too short to bother over it. Now, I ignore the bees to this extent. All hives occupied by a colony of bees are valued at a price equal to the hive if new. Or in other words I put an arbitrary price on every hive with a usable colony in it. I ignore all nuclei, weaklings or queenless colonies, and all "noses," be they "big" or "medium," are counted the same. All empty hives, whether with drawn combs or foundation, go into an "empty" class, prices at not over one-half of that of new ones in the flat. Arbitrary again, but as nearly correct as I can at present guess.

This is one of the places where it is both wise and necessary to adopt a simple and arbitrary way of estimating the stock. As this inventory is taken "out of season," either in fall or spring, there are no "swarms" nor "queens" nor "cells" nor nuclei to be considered.

Don't try to make a big showing here, nor to fool yourself by crediting yourself with a lot of stock of indefinite or varying value.

Valuation of the Beekeeper's Time.

The next important thing to determine is the charge to make against the business for your services. What are you worth? Are you a carpenter earning \$8 a day, a laborer getting \$2.50 for the same time or a salaried man getting \$5000 a year?

Charge against the business all you think you are worth, be it \$500 or \$5000—and then go ahead and earn it. Pay yourself each week or month as little as you can get along on until the money from the crop is all in, all bills paid and depreciation charged off, and then you will know if there is any money left to pay you the rest of your year's salary.

Everyone making beekeeping a business and depending on it as his chief means of support should charge the business for his whole year's time regardless of how the winter or "idle" season is spent. He may be in Florida or Europe—that is his good fortune—but he is entitled to his pay for the whole year if his efforts have yielded

enough to enable him to take a vacation part of the year.

The man running a small apiary as a "side line" and having to spend part of his time at some other business will have to decide for himself just what his time devoted to the bees is worth. He may be paid by the year at some business and yet have enough free time to care for his bees, or he may have a profession giving a fair and steady income. Such persons will have to determine for themselves how much time they devote to the bees and what it is worth. It is worth something and the bee business should be charged with it.

Cost of Operating a Colony of Bees a Year.

A year or two before the war two of us independently of each other figured the cost of operating a colony of bees for one year. We figured the actual time we devoted to the care of the colony for a year, including the extracting of the honey, valuing our time at \$5.00 per day. We figured interest on the investment and depreciation. We both arrived at \$2.00 as the cost of operating a colony for one year, including the labor of extracting 100 pounds of honey.

This, of course, included no "overhead," and no rent nor taxes, simply labor, depreciation and interest. It was of only relative value, giving a rough idea of costs. Now, it would be at least double as much.

How to Charge Time Used in Selling Honey.

If a commercial producer uses his time during the "idle" season to sell honey, he may very properly pay himself his salary as during the rest of the year, but it is charged against the producing account. All profit on sales goes into an account by itself, just as if the honey was bought from another

producer or as if the returns were interest from an investment in stocks or bonds. If a producer chooses to use his idle time to sell honey, let him remember that that time has been paid for by the producing end of the business and is in the cost of the honey. Profit on the honey is to be considered just like income from any merchandise bought and sold, and must not be confused with the production part of the business.

To recapitulate: Make an inventory of everything pertaining to the business and price it conservatively. Do not forget a working capital of cash. Put a value on your time at least equal to what you can earn in the business you have previously followed. Charge the business with your salary, with interest on the investment, insurance, rent of ground and building occupied, and expense of hired labor; deduct at the end of the year 10 per cent from the inventory, and you will then know what your business has cost for the year. If the bees gave an average yield of 100 pounds per colony and you had 500 colonies, you get 50,000 pounds; then divide the total annual cost as above indicated by 50,000 and you will know what your honey cost per pound. If you can not sell it for as much, the loss must come out of your "salary," and it is up to you to increase production or decrease expenses or both or else the business will soon belong to someone else.

If our business is to be worthy of respect, we must know "costs," outgo as well as income. Just now, this part of it is more important than any discussions of equipment or manipulation. It is a dry subject, but a vital one, and we have got to know it and know every bit of it.

Providence, R. I.



CO-OPERATION, in its various aspects, is a child of the marketing problem. It has been born; to murder it is crime; to be instrumental in per-

mitting its suicide is to admit defeat and an inability to cope with a factor looming in the path of an industry's internal expansion. Co-operation among beekeepers is in its infancy. It should not be strangled; it should not be allowed to die of disease; rather, it should be fostered, nursed, and properly cared for until it reaches a maturity that will insure its own protection.

The history of co-operative enterprises in the United States has not been written in startling successes. A far greater part of them have resulted, sooner or later, in failures. The reasons have been various. Con-

THE CO-OPERATIVE MOVEMENT

Some Reasons for Lack of Success of Co-operation Among Honey Producers

By William H. Wolford

low code of business ethics. Producers' co-operation, including that of honey producers, lies straining itself in the mud of unjust suspicion and mistrust in general.

A Start Has Been Made.

Already there have been numerous attempts to establish organized co-operation among beekeepers in certain localities. California has had them. New York is about to try one. All have met with disheartening opposition, and many have suffered so severely from internal upheavals and external wounds launched by opposing interests that they have lost much of their usefulness or

sumers' co-operation has suffered badly from the mobility of the American population. Wholesale and retail co-operation has been undermined by a

have gone under completely. A few still struggle on, formally carrying out the routine of receiving the honey of the member-producers, and of disposing of it in whatever way nets an approximation to the market price. This year it may go to the X & Z Honey Company; next year A B C, Inc., may get it. These kinds of organizations are but carry-along affairs, with from ten to a hundred dollars dues a year, and a fifth of a cent more per pound for the honey handled.

Some co-operatives make a big thing of the advantage derived from special discounts on supplies. Pool your orders, they say, and you save from five to twenty per cent. It sounds like a gold brick. It is—as far as getting the percentage off is concerned. But the pooled order very frequently is placed where the original list price of supplies is from five to twenty per cent higher than it should be in the first place. I have run short of containers and have bought them through direct ordering cheaper than I obtained a first lot through a pooled order. This is not a knock at the co-operative ideal, but is merely cited to show that many of our associations are not operating on a result-producing basis.

The Right Direction.

Any form of activity must have a definite goal. Otherwise it will appear in action like a basket of June bees dumped on a board with no hive in sight. A co-operative association should have a definite purpose for its existence; otherwise it resolves itself into an annual picnic trip. Live, wide-awake beekeepers must study how to market their honey as well as, say, how best to increase their yard without draining their honey crop. One is equally as important as the other. What good is a crop of fine honey stored in the honey-house if it must be given away in the end to one of a horde of speculators clamoring at the door and singing, in unison, "Three cents per pound"? Producers already recognize that in numbers there is advantage, but they are not arming themselves with modern weapons.

What the Middleman Now Is Doing.

It is beyond a doubt that the middlemen are performing practically all the functions of marketing honey. That is, it is through the middlemen that the largest proportion of all the honey produced in or imported into the United States is passed on to the ultimate consumer. By middlemen, herein used, are meant wholesale buyers and packers. Retailers are considered in another class. These middlemen buy directly from the producers; they store the various lots of honey; they repack it; they frequently put it up for market under a trade name; they drum the retail trade for an outlet of their branded product; they often influence the resale price to the ultimate consumer.

Many producers attempt to perform these functions for themselves. They market their own honey. They do it, I believe, be-

cause they find the additional profit attractive. With some live-wire men, this method has proved successful. But the majority of beekeepers have neither the time nor the inclination to undertake the marketing of their ware. If they find themselves with time to spare, they usually prefer to produce more and leave the specialized job of distributing to those more experienced and more desirous of the task.

The Open Door for Producers.

There is but one course for producers to follow if they ever wish to see more of the retail price of honey flow into their own pockets. They must market their honey themselves. They need not, however, do it individually. Small groups of producers might well band together, as a start toward future consolidation, and place upon the market a branded product. But in doing so, foresight in one respect is absolutely necessary. Branding a commodity and placing it upon the market distinguishes the goods so branded, educates people to call for it, and in this way creates a demand for it. To have ten or a dozen different brands in one section of a state would tend to lessen the effectiveness of any one.

The solution to this difficulty is this: There should be one great brand under which certified honey of a state or section is marketed; under this general trade-mark, if it is found necessary or desirable, sub-differentiation may be placed upon the label. Such sub-differentiation must not detract from the impressiveness or dominance of the general trade name.

The Necessity for Differentiation.

Little can be hoped for in advertising honey as honey. A shirt factory does not advertise just shirts. It advertises A B C shirts or X Y Z shirts, as the case may be. The factory knows that to stimulate the demand for a shirt as a shirt may not return that particular factory one sale in a hundred. But to puff and pat on the back A B C shirts will ultimately turn many shirt buyers to try the new factory's goods.

The same rule applies to honey, with two or three minor exceptions. The individual producer may have fair success, in his narrow circle, by advertising his name on his label, but for the best results, county, state and sectional co-operation of the right nature only can bring about a honey marketing scheme that will stand the test of time.

Avoid the Snags of the Past.

No country in the world has succeeded better with co-operative enterprises than England. Indeed, the practice has so popularized itself that today there is springing up competition among co-operative chains. This leads to the observation that England has passed through the stages of co-operative expansion, and has experienced the pitfalls and the accelerators of this form of marketing. A complete tabulation here is impossible, but among those that stand out

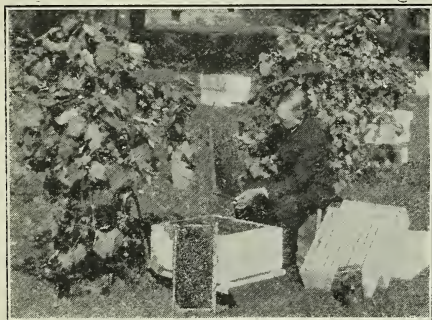
(Continued on page 811.)



SHADE FOR THE BEEHIVES

A. I. Root Tells More About the Grapevine Apiary of Olden Times

Over 50 years ago, in studying up different methods of shading the hives during the hottest summer months, I devised what I called my "grapevine apiary." In the spring and fall we want all the sunshine to strike the hives just as much as possible; and during a great part of the year sunshine is a big help; but when we have our very hottest weather, say in July and August, there are times when shade is very important. The shade of trees has been used, especially that of fruit trees; and if we could have a tree just big enough, and not too big, it might be a good thing. But most trees get to be big trees in spite of us, and therefore I settled down on a Concord grapevine. I decided that the hives



Part of the original "grapevine apiary" at the Home of the Honeybees.

should be somewhere from six to ten feet apart. Then about a foot away from the hives, on the south side, I put down a stout oak stake. These stakes were about as high as one's head and horizontally across the stake, about half way up, was a wooden strip about a yard long and three or four inches wide. Near the top of the stake a similar slat was fastened, and the Concord vines were tied to this post with the branches distributed along the slats. In the early volumes of our A B C book we had pictures of the hexagonal apiary; and right close to our factory was seen our grapevine apiary with four or five hundred hives.

What brings the matter up just now is the big crop of Concord grapes we have just harvested. Our different buildings have encroached on the hexagonal apiary that had the original number of 427 hives, so that now there are only about 300, and as many vines trained on the trellis as described above. For 50 years we have had a crop of

Concord grapes from these vines, more or less; but this present year, 1922, I think we have had the biggest crop of any. At 4 cents a pound the grapes brought something over one hundred and fifty dollars. From 300 vines this would make 50 cents per vine, or 12 to 13 pounds from each vine. Of course some of them gave twice that amount or more. Please consider that during all of these 50 years the vines have been clipped back to prevent interference with the apiarist when moving around.

By the way, I decided years ago that every hive should be so situated that the operator could walk all around it; and I think that most beekeepers nowadays have come to about the same conclusion. After experimenting with "house-apiaries," I said that I wanted each and every hive to stand out on the ground where it could get the sunshine, and where the apiarist could walk all around it. You will notice that the vine does not cut off the rays of the sun at all until the weather begins to be pretty hot; and on the approach of the first frosty weather the leaves drop off so the needed sunshine gets through once more. My original plan of years ago was to have the vines "kill two birds with one stone"—that is, furnish the needed shade and also bear a crop of fruit.

By the way, it is some trouble to replace the wooden stakes when they rot off—say once in five or ten years. I have been thinking of a very light stake made of reinforced concrete. But then would come the problem of fastening the cross-pieces securely. Stakes of locust or cypress might be better and cheaper.

A. I. Root.

DIGGING BEESWAX FROM A MINE

A Man Who Struck It Rich on the Pacific Coast

Recently while making an exhibit of honey and beekeeping equipment at the North Ashland County Fair, Nova, Ohio, Alvin Crittenden of that place showed me a piece of beeswax, concerning which he gave this interesting history. The wax was furnished him by a close friend, W. H. Calwell, Portland, Ore. The latter cut it from an original chunk in 1892.

The following story is vouched for by the above responsible persons:

In 1890-92 a man in the vicinity of Nehalem kept coming to town regularly with all the beeswax he could haul on a burro. When questioned as to his source of supply, he explained he was a wild-bee hunter. The amount he brought was so immense that suspicion was aroused sufficient to instigate a search. As a result a deposit of many tons

FROM THE FIELD OF EXPERIENCE

was found buried deep in the earth, and on top of the deposit gigantic fir trees 500 years old were growing. The age of the fir and the depth of the deposit, together with the fact that the ocean has receded three miles from this point, lead to the belief that it is at least a thousand years since the wax drifted ashore at this place.

About the wax was evidence of shipwreck, and indented in it were hieroglyphs of strange design. This allows the supposition that an ancient ship had through misfortune drifted ashore here.

The sample which Mr. Crittenden showed me was rather black but in good condition. Maybe some brother beekeeper in the vicinity of Nehalem, Oregon, who reads "Gleanings" can give us some more facts on this rather odd bit of history. W. W. Barnhill.
Polk, Ohio.

DEALERS AND SPECULATORS

Why Established Honey Dealers Prefer Stable Prices. Folly of Price-Cutting

Until recently the writer has, to some extent, shared the probably common belief that most honey dealers naturally are interested in keeping the wholesale price of honey as low as possible; but in talking with one of our largest western bottlers recently some new ideas were received, and these again were strengthened by the writings of two large honey buyers in October "Gleanings," E. R. Root and Geo. W. York. Mr. Root tells how his company decided to boost the local sale of honey to prevent prices from dropping too low, and Mr. York makes one of the strongest appeals for co-operative marketing that has come to my notice.

Just why should dealers desire to prevent honey prices from dropping below the cost of production? Is it not because such men are business men and not speculators? The latter class is always attempting to "bear" the market when buying, and "bulling" it when selling, in order to gain as large a margin of profit as the traffic will stand. The real dealer is interested in building up a steady, permanent trade, and his margin of profit is, as far as he is able to control it, based on a percentage basis of the turnover; for that reason he is not interested in the speculative elements, but would greatly prefer stabilized prices that would assure him his necessary margin. Of course it is only human that any dealer wishes to buy for a little less than the market price, but the thinking dealer realizes that, if he can buy for less than the market price, his competitor can likely do as well, and perhaps better, and that therefore the market has fallen, and that instead of buying "below" market he is buying on a "lower" market.

Here, perhaps, is the answer to the question that has puzzled some of our producers who this year attempted to move honey by cutting prices, only to find that the demand if anything decreased. Dealers do not buy heavily on a falling market. A retailer may move his stock by cutting prices; a small producer also may do the same, but if large holdings are forced on the market at cut prices the dealers will fear further declines and will adopt a policy of watchful waiting, buying only what stock they need; while if the market is steady they are willing to buy large quantities to enable them to get quantity discounts. J. Skovbo.

Hermiston, Ore.

BEEKEEPING IN AUSTRALIA

How Lack of Pollen Sometimes Causes Loss of Many Colonies

Ninety-five per cent of Australian honey is gathered from eucalyptus trees of which there are many dozens of kinds, and some are in flower at all times of the year. Most of the apiaries are located in forests and along rivers or lakes. Migratory beekeeping is resorted to, though of late years more of the mountain beekeepers are moving their bees out to the drier earlier pollen-producing country for the purpose of securing early brood-rearing, cope weed and wattle being very early and heavy pollen producers. Some varieties of wattles are in bloom all through both winter and spring.

Our seasons run in cycles of four or five years, one year being a very bad one, two poor to medium and two good to bumper. Seldom or never do we get a year when the bees will not gather ample honey for their own needs, but pollen famine is the trouble. The summer and autumn of 1920 produced ample stores of honey but little or no pollen, with the result that but little autumn brood was reared; and in the following spring, before the spring pollen was gathered and brood reared, the old bees of the winter cluster died off, leaving hives with ample honey in the combs, many bee farmers losing up to four-fifths of their colonies. Experiments to produce artificial pollen have so far failed. Beekeepers are trying to save the combs of pollen stored during the good years and keep them until the droughts.

In a good season apiaries on good forest sites will average over 300 pounds per colony, and individual records of 700 pounds and over are often recorded. A good forest site in a good season can hardly, if at all, be overstocked, but occasionally a small waspy fly comes in millions and almost crowds the bees off the blossom. H. W. Raggatt.

Natimuk, Victoria, Australia.



FROM THE FIELD OF EXPERIENCE



NECTAR FROM VELVET BEAN

Bees Do Not Gather It in All Parts of the South

I notice an inquiry in August Gleanings from J. M. Sturtevant in Alabama asking about the velvet bean as a honey plant. My observations of this plant in Mississippi lead me to believe that it is not used by bees. It does produce nectar in great quantities, but this nectar has the most repulsive taste of anything I have ever put in my mouth. Perhaps this has something to do with the unwillingness of bees to take it. I have seen many acres planted to velvet beans, and although I have seen them profusely in bloom I have never seen a bee at work on them.

Dogwood is often mentioned as a honey plant in the South, but I am of the opinion that it produces no more nectar there than it does in the North. I have observed it dozens of times but have yet to see a bee taking nectar from the flowers.

Ithaca, N. Y.

R. B. Willson.

Velvet bean blossom clusters, which are made up of individuals each of which is provided with a covering over the opening of the flower, protecting it against rainy weather, give us a peculiar opportunity to study its relation to honeybees.

Immediately following a rain the bees will begin work on this flower before nectar can be found in open blossoms. We have seen bees in usual numbers working on them from day to day and believe they gather nectar from them. The Mexican clover is also in bloom at the same time, and of course the honey stored at this time is a mixture of the two, and its acid taste and color are decidedly different from those of the honey stored immediately following the close of the velvet bean season. Our rainfall is very heavy, particularly at this season of the year, which fact has caused us to investigate the velvet bean with its rain-proof nature roof.

J. Clay Dickman.

Bay Minette, Ala.

The velvet bean does well on the "Tifton" and "Norfolk" loam soils of south Georgia, and on these soils may be counted on for a surplus year after year. The interplanting of the velvet bean with corn enters largely into the farm practices of south Georgia, and the velvet bean is usually present in most localities in sufficient quantities to be of considerable value to the beekeeper. In my locality I can usually rely on at least one shallow super of chunk honey from this source. On the low sandy, swampy series of soils and on the higher sandy soils of this region I do not think one can depend so much on the velvet bean. I understand that the velvet bean is also a good honey plant in the red hills of middle

and north Georgia, but I am not speaking from experience as to those localities. I doubt very much if the velvet bean would be of any value to Florida beekeepers, except north of Gainesville and west of Lake City.

The honey from velvet bean is inferior to honey secured during the spring honey flow. It has a peculiar acid flavor and is best sold in the comb. In my locality it blooms with Mexican clover and bitter-weed and is never secured absolutely pure. Such a blend makes a pretty article in the comb, but does not bring repeat orders when sold in the extracted form.

Mexican clover is the most important summer and fall plant to south Georgia beekeepers. It is a light-colored honey almost water-white in the comb and of fair flavor and quite superior to the velvet bean honey. It blooms from May 15 until killing frost in autumn, which usually occurs in this locality about the middle of November. It is impossible to eradicate this weed from cultivated fields. It furnishes a living for the bees all summer, and after cultivation stops in the fields it takes possession and furnishes a surplus during August, September and October. The velvet bean augments the surplus from this source during July and August.

Mexican clover honey can usually be secured blended with cotton honey during the month of July, but can only be secured in its purity during the month of October. At this season of the year it has almost matured its growth and blooms rather sparingly. The blossoms are open for a few hours in the forepart of the day, therefore no great amount of surplus can be obtained late in the season. The supers are usually removed and this late honey goes into the brood-nest. Where it is the custom to winter bees with all supers on the hive, many of which are filled with the low-grade fall honey, much velvet bean and Mexican clover honey find their way into the first spring extracting. I find it best to try to stock a locality to the limit so that very little if any of the velvet bean honey will be left over from the winter stores. I do not usually figure on marketing any honey stored in this locality after July 15, but leave it with the bees.

Glennville, Ga.

W. C. Barnard.



A HANDY SUPER LIFTER

A Device to Avoid Heavy Lifting, Made From an Old Wheelbarrow

Did you ever feel, when you stood in front of a hive of three or four stories, heavy with honey, that you would be glad of some plan by which these upper stories might be lifted off without almost breaking your back so that you could get at the



FROM THE FIELD OF EXPERIENCE



brood-nest for the purpose of requeening or clipping? Perhaps you are a professional man or backlotter, and not accustomed to heavy lifting. Perhaps you are an old man, a woman, a young miss, or a housewife who is unable to lift heavy weights, with no brother, husband or son handy at the time. If you belong to any of these classes you might appreciate a lifting-device, and at the same time something that would carry a load from one part of the yard to the other, or carry it to the honey-house.

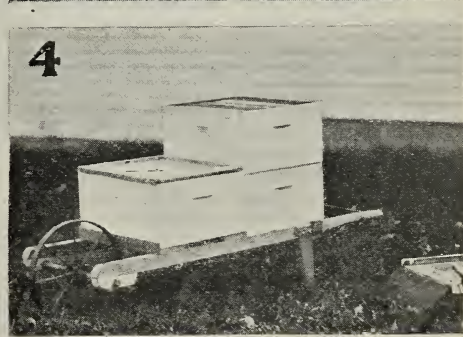
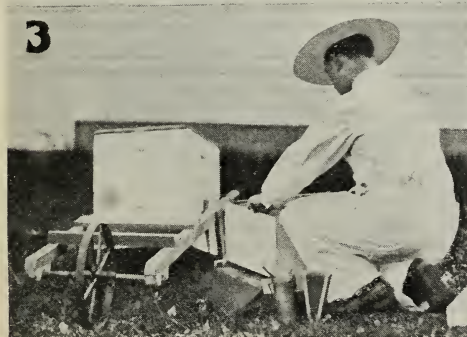
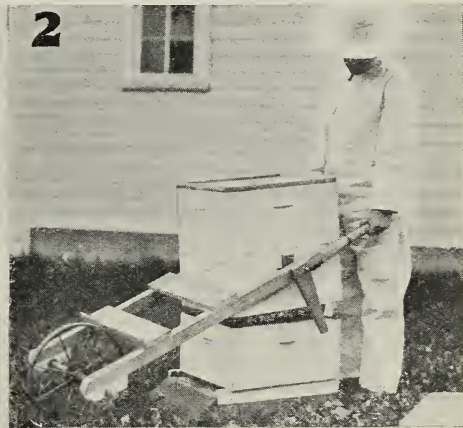
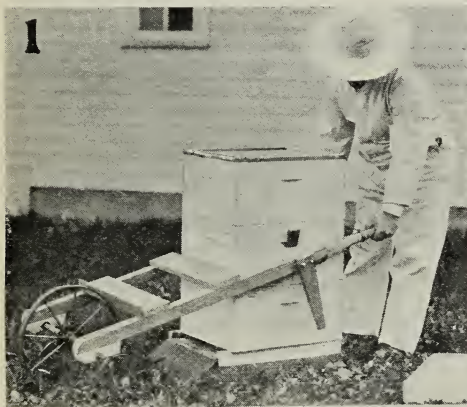
The four illustrations herewith will explain the scheme. Perhaps you have a wheelbarrow that has gone to pieces except the wheel. If you happen to be handy with tools you can make up a frame of hard wood like that shown in the illustration. The two side rails should be secured by the cross-braces far enough from each other so as to admit between the handles an ordinary ten-frame hive-body, or, more exactly, any standard hive that you may be using.

To use, back the wheelbarrow up against the skyscraper so the two handles will come astride the hive. Slip a wooden wedge between each of the side arms and the hive-body and then hook the cross-brace across the handles as shown in Fig. 1. With a hive-tool loosen the two parts of the hive and then lift up, as shown in Fig. 2. Swing it around to one side as shown in Fig. 3, when you will be free to do anything you please with the lower part of the hive. The supers in the mean time will be held high and dry where they can not crush nor break the frame bottoms. When the work is finished, swing the two upper stories back to their place. Push down on the handles, when the barrow is free.

You will observe in Fig. 4 that it is possible to use the same outfit as a wheelbarrow to carry loads.

While a strong man or a professional beekeeper might not need anything of this sort, yet if he happens to have a weak back he may find the outfit very handy.

H. H. Root.



(1) The handles of the wheelbarrow hive-lifter are slipped over the supers, and the wedges are put in the hand holes. (2) As the handles are raised, they engage the wedges, and the supers are lifted off the hive. (3) The lifter, together with the supers, can then easily be moved where desired, thus giving access to the brood-chamber. (4) The wheelbarrow hive-lifter used as an ordinary wheelbarrow for carrying supers to and from the honey-house.

FROM THE FIELD OF EXPERIENCE

HONEY BIRD OF EAST AFRICA

How this Curious Bird Leads Men to Honey in Order to Obtain Its Food

One of the most interesting and curious birds mentioned by Theodore Roosevelt in his "African Game Trails," is the honey bird, the habits and peculiarities of which he describes in detail.

"While on safari to the 'Nzoi I was even more interested in honey birds which led us to honey, than I was in the game," says he.

This special interest and attention, he tells us, was due to the fact that John Burroughs had particularly charged him to "look into this extraordinary habit of the honey bird; a habit so extraordinary that he (Mr. Burroughs) was inclined to disbelieve the reality of its existence. But it really does exist."

Mr. Roosevelt first mentions seeing the bird on his visit to Juja Farm, near Athi Plains, East Africa. In this reference he speaks of it as "the honey guide, the bird that insists upon leading any man it sees to honey, so that he may rob the hive and give it a share."

Later while hunting in the Sotik, a region abounding in big game, including lions and rhinoceroses, he gives "our first characteristic experience with a honey bird, a smallish bird, with its beak like a grosbeak's and its toes like a woodpecker's, whose extraordinary habits as a honey guide are known to all the natives of Africa throughout its range. Kermit had killed an eland bull, and, while he was resting, his gun-bearers drew his attention to the calling of a honey bird in a tree near by. He got up, and as he approached the bird it flew to another tree in front and again began to twitter. This was repeated again and again as Kermit walked after it. Finally the bird darted around behind his followers, in the direction from which they had come; and for a moment they thought it had played them false. But immediately afterward they saw that it had merely overshot its mark, and had now flown back a few rods to the honey tree, round which it was flitting, occasionally twittering. When they came toward the tree it perched silent and motionless in another, and thus continued while they took some honey—a risky business as the bees were vicious. They did not observe what the bird then did; but Cunningham told me that in one instance where a honey bird had led him to honey he carefully watched it and saw it picking up either bits of honey and comb, or else, more probably, the bee grubs out of the comb, he could not be certain which. To my mind no more interesting incident occurred at this camp."

"The natives believe that misfortune will

follow any failure to leave the honey bird its share of the booty. They also insist that sometimes the honey bird will lead a man to a serpent or wild beast; and sure enough, Dr. Means was once thus led to a rhinoceros. While camped in the 'Nzoi the honey birds were almost a nuisance; they were very common and were continually accompanying us as we hunted, flying from tree to tree, and never ceasing their harsh chatter. Several times we followed birds, which in each case led us to bee trees, and then perched quietly by until the gun-bearers got out the honey—which we found excellent eating by the way."

On one occasion Kermit stayed to see what the honey bird did after they left the tree.

"The boys had smoked out the bees, and, when they left, the tree was still smoking. Throughout the process the honey bird had stayed quietly in a neighboring tree, occasionally uttering a single bubbling cluck. As soon as the boys left, it flew straight for the smoking tree, uttering a long trill, utterly different from the chattering noise made while trying to attract the attention of the men and lead them to the tree; and not only did it eat the grubs, but it also ate the bees that were stupefied by the smoke."

Warren, Ohio.

James A. Brown.

STINGLESS BEES OF MEXICO

How the Natives Find Their Nests and Rob Them of Their Honey

The following incident related to the writer by Thos R. Worsham, an old gentleman who ranches for years in Mexico, may be of interest to your readers:

"Did you ever see stingless bees? I have seen them down in Mexico. The Mexicans call them 'avispas.' They don't look like bees, but more like large flies.

"One summer back in the '70's, I was hunting wild turkeys in Cerrazo, Mexico, near the Sierra Madre Mountains, with a Mexican. We had stopped beside a small stream, and were hidden in a thicket. There were lots of turkeys, they being so thick you could almost kill them with sticks.

"Suddenly the Mexican cried '¡Ay, una avispa' ('There's a bee!'), pointing at what looked to me like a very large fly, as it rose from the water's edge. (I wouldn't have noticed it.) It flew straight and low, and so slowly that the Mexican, following it, could keep it in sight. I ran after him the best I could, and must have gone a quarter of a mile (it seemed like a half mile over the rough ground), when I came to a thicket where he had stopped. There hanging from a limb about six feet from the ground, I saw what looked like an enor-

FROM THE FIELD OF EXPERIENCE

mous wasp nest, about four feet long and large around.

"The Mexican cut into it, and it contained some of the prettiest, clearest honey I ever saw. It was fine, too. The priests call it 'virgin honey.'

"And the 'avispas' did not sting at all!"

I enjoy every number of Gleanings.

Laredo, Texas.

Robert Hardin.

CAN A WOMAN KEEP BEES?

A System of Management Worked Out to Avoid Heavy Work

Ask that question of Miss Nina Scott, Henry County, Missouri, and you will not only get an emphatic "Yes," but you will also get a look which, translated, would mean nothing milder than "Why not, I'd like to know?" For Miss Scott speaks from experience.

"Whatever there is to do about an apiary, a woman can work it out so she can do it herself, if she really cares for the bees. Of course a great deal of it is quite hard work, but no harder than washing, or ironing, or sweeping. I would rather spend four hours lifting one frame after another, looking for queens and clipping them, than to spend four hours sweeping.

"Beekeeping is agreeable work for a woman, I think. It is something she can manage alone and do all the work, if there is nobody to help. I do all the work about my bees, except that my sister runs the extractor for me. There is a good deal of heavy lifting, and that is hard for a woman, but she can learn to adapt the work to her strength."

The real reason Miss Scott says "Pooh!" when you mention the hard work connected with beekeeping, if I judge rightly, is because she is so interested in what she is doing that she doesn't know that she is working. To her, beekeeping is more like play than work. Here is how she looks at it:

"Beekeeping is the most fascinating work in the world. Bees are unselfish and peaceable. They live and work for the colony. They are sensible; if they are running out of honey, they cut down on brood-rearing. If their queen is failing, they start queen-cells to raise another. A bee tamping pollen down in a cell with its hind feet is funny, and so is a swarm coming out. And there is always something to learn about bees."

A year ago, before the Missouri Apicultural Society, Miss Scott told some of her first experiences with bees. "I learned what little I know from books, magazines and experience—mostly experience," she said.

"I didn't get along very fast. I almost had to take in washing to support the bees the first two years. I expected the most

impossible things; I thought the white clover honey flow lasted all summer, and expected the bees to draw out full sheets of foundation when there was no honey flow. But I experimented and learned. I tried artificial cell cups and grafted larvae for queen-cells, and so on. I was prouder of the first artificial cell cups, with grafted larvae, that I got the bees to accept and build out, than I have ever been of anything since."

Then the beekeepers, old timers and would-be beekeepers asked questions, "How do you place your hives? How do you keep records? How do you control swarming? Etc., etc." Answers were forthcoming. And that those who did not hear her may have the benefit of her experience, I am setting down some of the main points responsible for Miss Scott's success:

"I use ten-frame hives, and full sheets of foundation wired, in both brood and extracting frames. In the supers, I use eight frames to a ten-frame super, spacing them wide apart so that the combs will be built out thicker. Then they are easier to uncap. My extracting-supers are half-depth; two of them are as deep as a hive-body, and they are heavy enough. I use some full-depth supers to get foundation drawn out for next year's increase and to replace my crooked or unwired combs. Full-depth supers are too heavy. My hive-stands are made of pieces of 2 x 4-inch stuff, three and one-half feet long, set up on edge. Fifteen-inch cleats are nailed on the ends to hold them on edge and the right distance apart.

"Each hive-stand holds two hives, facing south. Hive-stands are about 34 inches apart. That makes two colonies just the right distance apart. Then there is a wide space, then two more hives on a stand. I think the bees can more readily find their location when the apiary is broken up into groups of several hives each.

"To keep mice and moles from working up under the hives, I put a piece of tarred felt roofing down beneath each hive-stand. Let this extend several inches beyond the stand, to keep down the grass that can not be cut with a lawn-mower."

Every hive in the apiary has a number. Miss Scott keeps a colony record. The numbers for hives are cut out of cardboard, each piece of cardboard about the size of a postal. These cards are dipped in linseed oil, then dried, painted white, and the number is stenciled on the card with black paint. A screw eye is put into the back of each hive, and the number is hung to this by punching a small hole in the card.

In the record book there is a page or so of space for each colony. Take Colony No. 27, for example. In the book is this record:

FROM THE FIELD OF EXPERIENCE

"April 26—Clipped queen. Colony O. K.
 "June 2—Swarmed. Queen-cells and brood to stand No. 51.

"July 15—Extracted 48 pounds.

"October 2—Extracted 30 pounds; 78 pounds surplus for year.

"October 15—Colony weighed 76 pounds." "If they had weighed less than 75 pounds, I would have fed them till they weighed 75," Miss Scott explained.

When a colony swarms, the hive, with queen-cells and brood in it, is taken away, and the swarm is hived in a new hive at the old location. Thus, the old queen is still "doing business at the old stand." This plan of moving the old hive to a new stand gives the field bees to the swarm, and reduces the colony enough so that there are no after-swarms. If the colony is still too strong, the bees are shaken from a few frames into the new hive. The old queen is with the swarm, and, to keep records straight, her number is taken from the old hive and put on the new one at the old stand. Thus, the old queen keeps her colony number.

This plan of reducing the strength of the old colony is a big step toward swarm control—such a big step, in fact, that there is practically no trouble on this score. As an added precaution, however, every queen is clipped in the spring; the first year the left wing, next year the right wing, and the next year both wings. Miss Scott does not believe that a queen exhausts herself in one year, and therefore doesn't requeen every year. One colony, with a two-year-old queen, was the best in the apiary in 1920. The same was true in 1915 and 1916. As far as requeening goes, the bees themselves are allowed to do most of it. "They will do it when they get ready," says Mrs. Scott. "They usually keep a queen two years; sometimes three.

"When we want to increase the number of colonies, we make the increase from our best queens; hence the need of records. It is just as important for a beekeeper to keep records as for a dairyman to keep records."

"But I am afraid of stings," says a timid one. "How can I protect myself?" Miss Scott's answer is to "wear overalls or unionalls. Also, wear a good bee-veil. A black veil is easier on the eyes than a white one."

Getting the swarm into a hive is no end of a job for the beginner. Miss Scott's method is simply to let the swarm hive itself. The queen is clipped, so when she comes out with the swarm she can not fly and will crawl around on the grass or weeds. The swarm in the meantime will settle, perhaps on a peach tree. This gives a chance to put the queen in a mailing cage, and the cage is put in a shady place until needed. The old hive is set aside and a new one, fully equipped, is put in its place. The

swarm, missing the queen, comes back to the hive (the new hive), and the queen when released goes in with them. Then the old hive is moved to a new location. What could be simpler—to the one who knows how?

E. A. Kirkpatrick.

Narberth, Pa.

HONEY PRODUCERS' LEAGUE

Notes and Announcements Concerning the American American Honey Producers' League

The officers of the League are planning to cater to those who are anxious for a "regular old-fashioned beekeepers' talk-fest and good time," as well as the business men who make up the principal membership, at the St. Louis meeting on February 6, 7 and 8. The Hotel Statler has been designated as headquarters, and all meetings, including the annual banquet, will be held there. Those who wish to take rooms in the same hotel are requested to make reservations at as early a date as possible, as St. Louis is filled with guests during February. Numerous hotels and boarding houses at moderate rates are also available in the general vicinity.

Honey sales may be stimulated by offering a recipe book as a premium to each purchaser. The best thing of this kind ever issued is the one recently published by the American Honey Producers' League—21 pages on the keeping of honey, and its use in bread, cakes and candy-making. Honey producers should put this into the hands of every purchaser.

Order from S. B. Fracker, Secretary of the American Honey Producers' League, Capitol Annex, Madison, Wisconsin. The booklet can be secured at the following rates, postage extra, shipping weight about six pounds for each 100 copies: 20 copies, \$1.25; 100 copies, \$4.50; 1000 copies, \$33.00. Ten per cent discount is allowed to affiliated members of the League. The name and address of the purchaser will be printed on the booklet without additional charge in the case of orders for 200 or more copies.

The League Bulletin, official publication of the American Honey Producers' League, is now being mailed each month to the affiliated members of that organization. It is sent out from the secretary's office, American Honey Producers' League, Capitol Annex, Madison, Wisconsin.

According to the November number, affiliation with the League carries with it the following privileges: 1. Free subscription to the League Bulletin which may be expected monthly from now on. Marketing reports are to be included after this issue. 2. Ten per cent discount on copies of "Honey, How and When to Use It," a recipe booklet for

FROM THE FIELD OF EXPERIENCE

distribution to customers. A single order for 200 of these booklets will save enough to pay the affiliation fee. 3. The right to use warning posters, offering a reward for the arrest and conviction of thieves and marauders in apiaries of members. 4. Assistance in the adjustment of claims arising from suspected fraud and misrepresentation. 5. Legal aid in opposing the enactment of state laws and city ordinances injuring beekeeping. 6. Share in an organization which has advertised honey nationally, has distributed 18,000 honey recipe booklets to all parts of the United States, has supported the recent advance in the tariff on honey, reducing competition from cheap foreign honey, and has upheld beekeeping interest in city councils, state legislatures and the United States Congress.

Individual membership at the dollar rate is open only to members of affiliated organizations. If you are interested, write the secretary of your state organization. The League will send you his name on request.

S. B. Fracker, Secretary-Treasurer.

Madison, Wis.

WINTERING IN DAMP CELLARS

Providing Opening at Top of Hives to Allow Escape of Moisture

Nearly 30 years ago I was persuaded to winter about 100 colonies of bees in an old pole and earth root cellar at an outyard, instead of taking them 15 miles to my own cellar where I had been having fair success in wintering. I fixed up the old place, putting in a good-sized ventilator in the roof and piled the bees in, using pretty nearly every foot of space.

In the spring I had 60 hives full of moldy combs, dead bees, honey and water.

Some were advocating tight sealed covers at that time; but it was my last, and I have not had a moldy comb since, for I have drawn my flat covers forward, leaving not more than one-fourth of an inch space intentionally at the top and back of the hives wintered in the cellar. A damp cellar is not a bugaboo to me, as with some that have complained to me until I have explained my way of ventilating the bees.

I once saw in my cellar water dripping out of a hive which was the bottom one in a pile of four and between other piles of four. It was rather hard to get at, as there was no room at the back of them. I said to myself, I have neglected ventilating that hive, so the pile must come down; and sure enough it had a tight sealed cover. I ventilated it and returned the pile as it was before. In 36 hours the water had disappeared from the entrance and it appeared as dry as the others. (See Editorials.)

Pierpont, Mich.

Walter Harmer.

ENTRANCES CLOGGED—WHY?

Unusual Weather Conditions Cause Dead Bees to be Left in Entrance

Last winter we had two yards of 100 and 175 colonies respectively that were well packed in new single winter cases. The entrances to the hive proper were five inches by a half inch, and a bridge ten inches wide and two inches deep leads to the outside case. The entrance in the outside case was closed down to depth of bridge by one-half inch in width. Although there was no snow to block the entrances in any way, we found a number of colonies with these large bridge spaces crammed with dead bees, the small outside entrance being plugged solid in some cases. We promptly removed all the gates used to contract the outer entrance for winter, as we felt it would be taking too great a risk if a heavy snow storm should come while the bridges were filled up with dead bees.

I attribute this unusual condition altogether to the fact that the bees, being able to move around nearly every day (most of the colonies were very strong in the fall), cleaned out all their dead bees and carried them into the bridge passageway, but it was too cool to allow them to take them outside, so they gradually clogged these large spaces. If it had been severe weather the dead bees would have been left under the combs, on the bottom-board; and, on the other hand, if there had been days warm enough for a flight, the dead would have been carried out at once.

J. L. Byer.

Markham, Ontario.

PEDDLING AT WHOLESALE PRICES

How This Folly Lowers the General Market for Honey

I sell directly to the retail stores and sell practically all of it within the county. This year I started with the 5-pound pail at \$1.00 and the 10-pound pail at \$1.90. I should have kept it at those prices probably, but some outsiders came in and peddled it out at less. I have now put the retail price at 90c and \$1.65. The storekeepers get 20c for selling the 5-pound pails and 40c for selling the 10-pound pails. I put an advertisement in the local papers giving prices and the stores where it can be bought. Two years ago Smith & Son, Jefferson, Iowa, sold 1200 pounds of my honey, and the same year a meat market in Churdan, Iowa, sold 1200 pounds. The sales were rather slow to begin with this year, but are improving fast now. When I have an advertisement inserted in a paper I always give the editor a 5-pound pail gratis. Geo. M. Thomson.

Grand Junction, Iowa.

THAT is a most instructive editorial on page 695 of the November issue, on the amount of "Moisture given off by bees during winter."

According to this editorial, when a colony consumes 17 pounds of honey during the winter it would exhale $1/12$ of a pint of water a day, or approximately $1\frac{1}{2}$ ounces, or 582 grains of water. At average winter temperatures here in the North, one cubic foot of air contains about one grain of water. If, when taken into a hive, the temperature is raised to 50 degrees, it would, if saturated, hold about four grains of water, a gain of three grains. As a result it would require 182 cubic feet of air to take up all the water given off by the bees in a day, or eight cubic feet of air to be warmed up by the bees and pass through the hive for each hour of the day. This looks like a rather expensive way to get rid of it. The point I tried to make in the article referred to was that it is more economical to sift the moisture of the hive through warm porous packing than to get rid of it by passing a current of cold air through the hive. In ordinary practice, I believe the moisture generated by the bees leaves the hives in both ways. When we have porous packing above the bees, more or less water passes out at the entrance, as is shown by the frost that collects about it. Also where dependence is upon a circulation of air to rid the hive of moisture, more or less is absorbed by the walls and cracks of the hive and passes off. (See Editorials.)

* * *

One feels like congratulating Edw. A. Winkler (page 696) on his great crop of clover honey; but, if the production of honey continues to increase in the future as in the past few years, and prices go much lower, I hardly see how those of us who live in less favored regions can make the business pay. However, it does not pay to be pessimistic. If prices go very low a multitude of people who now feel they can not afford it, will learn to use it, and the demand be greater than the supply.

* * *

Our friend, J. L. Byer, on page 702, discusses the hive question in a sensible way. Mr. Byer is not a large man, but he does some tall thinking. Many beekeepers are like some other folk—they like to let others think for them. So we have had a good many fads in the past 50 years, only to pass as they came into use. Some prominent beekeeper makes a statement and the crowd follow, whether it is a large or small hive, reversible frames or what not. While Mr. Dadant is today advising large hives, J. J. Wilder is advising the use of small brood-



chambers. There is little doubt but that a large brood - chamber is better for certain localities and purposes than a small brood - chamber. The same can be

said of a small one. Nothing pays a beekeeper better than to do his own thinking, and every yard of bees should be, in a small way, an experiment station.

Mr. Byer, page 725, speaks of different methods of requeening and lack of success in cutting out all queen-cells but one. I, too, have failed in doing this, as I frequently found such colonies would swarm out and leave the old colony queenless.

* * *

How it quickens one's pulse and stirs his ambition, to read the account, given on page 703, by E. R. Root, of the operating of 10,000 colonies of bees by one family, producing more than a million pounds of honey in a single season. My, but it is great! But when I think of our short seasons, our uncertain flow of nectar, long cold winters and how difficult it would be to do such a large business in the North, I fall back on the statement of a very wise man nearly two thousand years ago, that "Life consists not in the abundance of the things one possesses." But we will rejoice that some one can do the great things.

* * *

A. I. Root's reference, on page 735, to artichokes as a farm crop, reminds me of my experience with them many years ago. I planted half an acre and used the roots to feed a cow during the following winter. As the roots do not keep well in an ordinary cellar, I stored as many as I wanted to use during winter in my barn and let them freeze. When I wanted to use them I took enough to the house to thaw out for the next day. Cattle are very fond of them, and I found the artichokes saved me a large bill for meal.

* * *

George Harrison, on page 706, gives some good points in packing hives for winter. However, when he advises to place the packing in one-half inch trays, made of half-inch lumber, I can not help thinking that packing can be handled much more conveniently and quickly if placed in large sacks. We formerly used trays but have long since discarded them for bran sacks.

* * *

On page 721, Edw. Hassinger, Jr., says, "We are very sure that our health in general suffers from bee-sting poison." While this may be true in some cases, I believe, as a rule, the poison of bees does no permanent injury to those who care for them. It does not appear to be a cumulative poison and is quickly removed from the system.

THE busy man had to make a business trip to San Francisco early in October and decided to drive his little roadster from Los Angeles there

and back, nearly a thousand miles, take me along and call it a vacation for us both. Some of you who have not yet visited our Golden State may not know that it has thousands of miles of the finest roads in the world, smooth, wide roads which are practically dustless in the driest season of the year, roads of moderate grades on which you can drive from San Diego to Portland, Ore., without going out of high gear, although you cross whole mountain ranges.

Forgive me, if I seem to boast a little now and then. Perhaps it is to keep up my spirits, for in my native state, Ohio, October is a very beautiful month with its maples turning to crimson and gold. When I think of walking through the crisp fallen leaves in that soft, golden light which sifts through the remaining leaves on the trees after the first tonic frosts, I have to look hard at our glorious mountains and talk fast about all the advantages of life in California to prevent something like homesickness. But this beautiful drive through our chosen state has taught me that somewhere in California one can find almost any kind of scenery or climate he wants, although we have made just a beginning of exploring.

We decided to go by the coast route and return by the inland and we therefore left our San Gabriel Valley early in the morning, crossed the great arroyo bridge and passed through the San Fernando Valley with its rich farming country and many thriving little cities, of which I have written in former articles, took the Ventura boulevard through a pass from which we emerged to look down into a level, fertile valley in Ventura County. The map shows Ventura and Santa Barbara counties largely covered by mountain ranges with a comparatively narrow strip of fertile, arable lands near the coast. But that "strip" is most attractive with great fields of beans, sugar beets, lemon groves, flowers, grazing stock and more beans. I didn't suppose so many beans were needed in the world as we passed through Ventura and Santa Barbara counties. There were little navy beans and lima beans, both large and small. There were beans green and growing, dry beans, cut and raked into hills in long rows, and beans being threshed. It recalled to memory "Bean porridge hot and bean porridge cold."

There were beans growing on mountain slopes which looked too steep for cultivation, and there were beans growing on the beach just a few feet from the waters of the Pacific. It must be a great locality for bees in the blossoming season, for I am told beans

Seeing California From a Roadster

CONSTANCE ROOT BOYDEN

(Stancy Puerden)

yield a very fine honey. Apparently the frosts of last winter had not been so destructive as in our locality, for the tender lemon groves seemed untouched and

there were tall scarlet hedges of geraniums unhurt.

FOR many miles the road ran along the beach with low ranges of mountains close on the right, the railroad sociably close to the highway. When on a motor tour with the busy man in the East I have usually sat with a "blue book" on my lap, ready to read descriptions of roads in order to make sure to take the right turn. That is quite unnecessary in California. All along the coast route were signs "El Camino Real" (The King's Highway), for this road was laid out by the old Spanish padre, Junipero Serra when he and his successors established the many missions for the Indians along the coast. The only places where one might temporarily miss the road are the towns where the signs are apt to be omitted. In the country there are few crossroads and El Camino Real is an easily followed path up the state.

It was on the first day of our trip that we saw a beautiful mirage. Across the level floor of the valley, far ahead of us and to the left, was a glimpse of a clear lake which reflected the color of the sky. As we approached we could see eucalyptus trees which grew on its banks mirrored on the still surface of the water. There was a house under the trees, and I thought it was a beautiful place to live. But when we were opposite, or perhaps a little beyond, although house and trees were there the lake had disappeared, but miles ahead was another which also vanished when we passed. We saw much the same effect in the San Joaquin Valley when we were coming back by the inland route.

The coast route is historically interesting because of the old missions and the Spanish influence which is evident in many of the older towns. We passed a number of vast old Spanish ranches which are being subdivided and sold.

We drove on and on along the beach enjoying all the pleasures of a sea voyage with none of its discomforts, for we acquired amazing appetites, and you know some of us unfortunates lose not only our appetites but the acquisitions of former appetites when on the water.

We resisted the temptation to stop in beautiful Santa Barbara for the night and after some distance reluctantly left the ocean and climbed through Gaviota Pass, which took us into narrow Santa Ynez valley in the heart of which we finally stopped for the night at a little hotel.

Many motor tourists camp on the way, but I would wish to be well enough acquainted with the road to pick the camping ground in advance. Some towns provide pleasant camping grounds with shade, water, fuel, a little provision store and all conveniences. But the camping site in other towns seemed to be selected because it was a location good for nothing else, with no attraction nor conveniences and no privacy. We were fortunate in finding comfortable, clean little hotels, with rooms at very reasonable rates, and we preferred to take most of our meals at restaurants. Just as a matter of information let me state that the busy man estimates my going with him cost less than \$5.00. You see no more gas was required for two, and some of the hotels charged nothing additional for two in a room while others charged only 50c extra. That, of course, does not include the time we spent in Berkeley, across the bay from San Francisco, for we were entertained there at a private home.

EARLY in the second day of our trip we encountered the only unpleasant bit of our whole ride. We had been told to expect a detour of a few miles, but did not know the detour was in a mountain pass. The mountain passes on the state highways are generally a delight as the roads are so perfect and the grades so gentle that one can keep in high gear, as I have remarked before. But this detour took us over a narrow, deeply dusty, bumpy, unsafe-looking road with steep grades. I suspect the scenery was beautiful, although that is not what sticks in my memory. In spite of the busy man's assurance that there was no danger I sat tense, perspiring profusely, although not with heat alone, expecting momentarily that the edge of the narrow road would crumble and let us go hurtling down into one of the deep gorges when we had to turn out for the great, heavily laden trucks with trailers which were coming down with materials for the construction gangs on the new road. We happened to be going in a direction which necessitated our turning out instead of hugging the mountain. We climbed and climbed and I rather envied the passengers on the near-by train which took a short cut through a tunnel.

While we were waiting on an extra-wide ledge to let several trucks go by and incidentally cool the water in the radiator, for that truck-impeded mountain detour forced us into second gear, a man came along and pulled up to warn us of more trucks coming around the curve. The busy man asked him how much more of the bad road there was. "Oh, it isn't far," he said, and then, letting his eyes wander to me he seemed to wish to be polite and reassuring to the lady and added kindly, "It's a pretty d— short distance."

He was right, we regained the good road at the summit a few yards beyond the curve

and soon emerged into the valley through which runs the Salinas River. The coast route is just one valley after another.

ICAN'T remember all the superlative points of excellence of the various valleys, counties and towns through which we passed. I remember the hotel proprietor in the Santa Ynez valley said: "This is God's Country. It has the finest climate in the world and there is absolutely nothing which will not grow in this soil with irrigation." I am beginning to believe that "God's Country" is a state of mind rather than a locality and that all good westerners from the Rio Grande to the Canadian boundary live within it.

San Luis Obispo County is said to be the richest unirrigated county in the state. Other localities are superlative for certain crops, fruits or stocks. It is a poor place in California which has not its superlative. I suspect in Death Valley there are placards calling attention to the fact that it is the lowest spot in the United States, the hottest, the driest and perhaps the least crowded.

We kept close to the Salinas River all the second day and although the weather was rather uncomfortably warm for driving, between four and five in the afternoon it turned suddenly and surprisingly cool and we were wearing winter coats by the time we reached Salinas where we decided to spend the night. We were taking three days for the north-bound trip as we were both very tired when we started. One does not have to be a resident of California very long to learn that sudden cool weather generally means rain, but I was surprised in the night to be awakened by what appeared to be lightning, and when I heard unmistakable thunder I awakened the busy man to hear a genuine Ohio thunderstorm. It was great fun in the morning to hear the old residents talk of that "dreadful thunderstorm which shook the earth." The hotel clerk assured us it was "very unusual," that although he had lived in California 20 years he had never known a thunderstorm like it before.

STARTING from Salinas early in the rain-freshened day we decided to leave "El Camino Real" and go to Santa Cruz in order to drive through the Redwood forests in the Santa Cruz mountains. We passed through Watsonville, the apple city, with its great orchards spread over the valley and running up into the foothills. I don't believe "apple blossom time in Normandy" can be any more beautiful than in the region around Watsonville. I am not yet prepared to state that any California apple has quite the flavor of an Ohio-grown Northern Spy, but there are very fine apples here, much finer than the western apples one buys in the East. I imagine the reputation of California fruit suffers from the fact that it is shipped such a great dis-

(Continued on page 809.)

MOST of this
Sideline
material

was written aboard train, part of it on the way across the great plains to Denver, some of it on the way back. It was so short a stay there, so brief a visit to a sister, not seen for years, that there was no time to look up Colorado beekeepers—except for the trip to Boulder, where we visited Wesley Foster's plant, and were hospitably dined at his home; so hospitably, in fact, and so generously, that the friendly talk following the good dinner made it too late to drive out to any of his yards. But they drove us up Flagstaff Mountain, my first mountain drive, where to my unaccustomed eyes the world seemed spread out at our feet in the brilliant Colorado air.

Mr. Foster and I ran in on Prof. T. D. A. Cockerell, Entomologist of Boulder University, who showed us his wonderful collection of bees; more than 700 species found in Colorado alone, besides uncounted others from all parts of the globe. Such a collection! All sizes, from some much larger than our drones down to one from Africa (I believe) so tiny that a magnifying glass would be required to distinguish the detail. And such colors! Many were banded like our Italian honeybee, only more gaily, with brilliant bands. Others were of solid colors—blues, greens, yellows, browns, shades I cannot name. Irrescent, shimmering rainbow hues. There is no other collection in the world to equal it, I was told—not by the modest Professor himself, but on excellent authority. When he is through with it, it is to go, he told us, to the National Museum.

On my last day in Denver we drove by winding mountain roads up to beautiful Echo Lake, stopping towards the top to put chains on the wheels, as we had come into 8 or 10 inches of snow. Yet when we stopped, the men made a fire and we had a fine beefsteak fry, in a pine woods at a height of 10,600 feet, with snow on every side.

Coming back east, I met Mr. Allen at St. Louis, and on our way to Chicago, we stopped at Hamilton, Ill., where we were royally entertained at the home of C. P. Dandant and his pleasant family. There were beautiful drives along the Mississippi, an interesting visit to the prosperous plant of Dandant & Sons, a call at the home of Mr. Pellett, happily recovering from a serious illness, and a tour through the great power house connected with the famous Keokuk Dam. At Chicago, visiting another sister, the time was again too brief to look up beekeepers. We reached home just in time to get this copied and rushed off.

The rest of this Sideline Department for December, 1922, I am going to indulge my-

Beekkeeping as a Side Line

Grace Allen

self in the whimsical desire to address you all directly, as in a personal letter. Thus:

Dear Sideline Friends of Gleanings:

When one

comes to the end of a thing, he naturally stops a moment to look back. Looking back now across my days with Gleanings I pass in memory over eight years, back to August, 1914, tragic summer of a tragic year. A prince was shot. Immortal little Belgium faced a whirlwind and saved the world. France flashed to battle line. England crossed the Channel. Earth was a flame.

It was during that overwhelming summer that I began writing for Gleanings. Before that first devastating shot was fired, I had done the first article and the first little verses. Great emotions swept all our hearts during those swift incredible days; we had all, later, engrossing war activities; yet the steady enduring accustomed occupations went quietly on. Down in Tennessee, Beauty still walked the hills, there were roses and hollyhocks and mocking-birds, courtesy and treasured traditions. As most of you went your accustomed ways, apianari and other, I went mine, happy with the bees and the new pleasant relation with Gleanings.

But I was no prophet in August, 1914, I caught at that time no slightest glimpse of the long incredible cruelty nor the world-engulfing scope of the war. Nor did I even glimpse the delight and satisfaction to come to me through Gleanings, from the unguessed beautiful friendships to be born in its columns. They came on together, the terrible far things and the beautiful near ones.

November, 1918, ended the war, setting its length at a few months more than four years. Still, in peace as in war, bees sought clover blossoms in Tennessee and our hearts knew the quiet serenity of living among gentle people; and still, through the columns of Gleanings, the pleasant new friendships came and the old ones grew.

Now, December, 1922, brings another lesser ending, that of my connection with Gleanings, setting its length at a few months more than eight years—four years of war, four years of peace.

Why am I leaving Gleanings, you ask? I might say, for that best of all reasons. Because. (Bee-cause, someone would surely amend!) But it is really like this. That night last summer when I stood beside my loved Mother in a room in Memphis that had suddenly become unendurably silent, with the heavy unbreakable stillness following the last breath of a loved one—an only brother taken at thirty-one with pneumonia—that night, and numb dumb days that fol-

lowed, left me inexpressibly tired, wearied with unutterable emotional weariness. I could not write. I was empty, somehow; completely empty; and sitting down, alone, haunting hours came persistently back to be lived over. Then another thing (of course, the deciding one); don't you think women have some sort of mental antennae that somehow reach out and sense things? Well, one autumn day I wrote the Editors that my mental antennae sensed that this Department was their despair. (Remember their desperate and futile effort of 1921 to swing it into something practical? Remember, this past spring, the "irate gentleman" who shooed me gently back from the age of Augustus to 1922? Well, you see, he is one of the Editors. I just don't stay put in proper departmental limits. And that is hard on Editors, even the patient, courteous Editors of Gleanings.) So I said if they would like this Department discontinued, it would be very easy, because of my weary-heartedness, to stop. Sure enough, they admitted they did have plans for some changes, and if . . . And so . . . See?

And now, in parting, I wish that I might lay before each one of you who have stretched such friendly hands to me in these past eight years, my tribute of appreciation for the gifts you have brought, the fair, rare, high gifts of the spirit—the heartening word, the chatty beekeeping letters, the joys shared (and the sorrows), the friendliness, the great unexpected friendliness. I should almost like to name them over one by one, these beekeeping friends, to offer frank and open thanks for this great gift of friendship;—the queen-breeder from Texas, who once shared with me his fine enthusiasm for a lovely little child; another Texas man who sends extra stamps in his friendly letters, lest others forget, and who is coming to see us when they strike oil: one from the far northwest whose Omar Khayyam loved in college days, turned to dust in his heart when his boy went off in khaki (the pity of it—that sometimes loved beauty fails at last, like del Sarto's wife, to take the soul to the heights): one in New England who showed me the beautiful Mohawk Trail; the girl in New Zealand who let me know the charm of her far-off country and the high gallant courage of her blind mother and the desolate days following her death; the man of the same land who copied a great poem and through letters let me feel the sharp contrast between life in London even enriched with good music, and that of a free sun-swept farm in New Zealand, with bees and health; the boy in the Australian Imperial Expeditionary Force, who, writing from Somewhere in France, shared the quick memories of the home bees and the home girl (my last letter to

him was returned from France, undelivered; did you get back to them, Australian Soldier?); the woman in Ohio—perhaps the only non-beekeeping friend who has come through Gleanings—who has found a close bond in our common love of the poets and the things of the spirit; the woman in Vermont who writes of sleighs on the snow-bound earth and sap dripping from maple trees in early spring; another New England woman with an "understanding heart" and letters of rare charm; the man in North Carolina whose letters are filled with the spirit of outdoors, frogs and stars and garden-making and a singing through the dark; the Japanese friend whose cards and letters have brought a whiff of cherry bloom from old Japan; the Englishman of Jamaica who knows Selborne and cares for live books; the woman in Florida who—but no, it might sound like boasting to tell of her, as though I were saying, Behold how great a friend I have, rather than, as I mean it, Behold how great a friend she is! What heights and depths and breadths of friendship she has opened to my heart! And oh, all you who love Vergil—all you who love myths! And the many, many more of you, of various states and other lands, each bringing the priceless gift of the kindly heart and the generous word and the great irresistible charm of friendliness. How my heart has loved and appreciated you all.

There have even been times when this friendly spirit has been symbolized by material gifts, practical or lovely—queen cages and hive-tools and feeders and winter packing-cases, poetry and honey and citrus fruit and shining-leaved holly, journals and papers and books and pictures, dainty hand work and—the grace of it!—bulbs of canna and tuberose and cinnamon vine, hollyhock seeds and the seed of wild thyme. My deep thanks to you all.

I have not been a good correspondent. To many of these friends I am in heavy arrears of letters, weeks, months, even years. Can you believe, dear friends whom I have never met, that the fault is one not of the heart but of the hand, or the unskilful ordering of my days? You cannot know what you have meant to me, one and all, or what you have brought to me that eye hath not seen nor ear heard but which have entered into the heart of me, of graciousness and kindness and high whole-hearted courtesy. May the years drop their fairest blessings on you. May your bees, dream-driven, undaunted, go humming happily, ardently, inspiringly, from flower heart to flower heart, bringing their precious freightage home to the waxen urns for your garnering, while the singing eagerness of them and their rapturous content become a very part of the veriest deeps of the innermost deathless part of you.

GRACE ALLEN.



FROM NORTH, EAST, WEST AND SOUTH



In Southern California.—The weather in southern California is still very dry. Usually we have some rain before this date (Nov. 4), but nothing more than a light sprinkle has fallen so far. Cool nights prevail and the bees have little to induce them to fly. This is as near the broodless period as we ever get in southern California, and by December or January all prosperous colonies should have a good start in brood. November is a good month to take off all supers containing empty combs, leaving only those containing brood or honey.

The Southern California Fair was held in Riverside Oct. 11-16, and has been pronounced the best ever. The exhibits put on by the beekeepers' clubs would be a credit to any fair. Three prizes were offered for the best display of honey and those things pertaining to the bee business. The first prize of \$150 was given to the Riverside County Club; the second, of \$100, was given to the San Bernardino County Club; while the third prize of \$50 was awarded to Orange County.

The Riverside County Beekeepers' Club met November 4, with a good representation of Riverside and San Bernardino County beekeepers present. After some discussion it was decided to accept the offer of a local firm to make foundation for club members at a price of 11 cents per pound. While this was not quite so low a price as was offered by a firm in Los Angeles, it was decided that the advantages of being able to go directly to the warehouse, deliver the wax and take the foundation along home, were enough to overbalance the small difference in price.

A committee was appointed to formulate plans whereby the small producer can be financed when considered advisable. The small producer is the one who is apt to sell his honey at a low price early in the season because he needs the money, and the market is apt to be weakened thereby.

Since my last letter, accompanied by Mrs. Andrews, I took an auto trip through the great central valley of California and as far north as San Francisco. The return trip was made by way of Santa Cruz, Santa Barbara and the coast valleys. This trip of about eleven hundred miles gives one some idea of the vast territory available for honey production and agriculture. North of the Tehachapi range of mountains very few localities report a satisfactory crop of honey, while most of them report almost a failure.

A side trip of some 40 miles south from the historic old town of Monterey to Big Sur, where our fellow correspondent, M. C. Richter, has located, formed one of the pleasant diversions of the trip. About 35 miles of this road winds back and forth, up hill and down, now near the ocean

waves, then some miles back, first among the redwoods, then up among the sages—giving one a most scenic and enjoyable trip. Big Sur is a small resort on the Big Sur River about two miles from the Pacific Ocean. Fine fishing is enjoyed in season, deer abound in the mountains, and if a fellow could not enjoy himself there, we do not know where he could. Stately redwoods abound in the river bottoms, while the sages and other honey plants grow in great profusion on all of the mountain sides, beginning a few hundred feet up from the river and covering the mountains to their tops. In this locality the mountains are not very high (perhaps about 4000 feet), but are "most awfully" steep and rough.

Very little of the great territory lying in the southern part of Monterey County is accessible by wagon or auto road. Some parts are reached by horseback over government trails. While the country produces the finest grade of white honey from the black sage, it is well that we all have the privilege of producing honey where we like, and the writer is well satisfied to operate in southern California. The contract has just been let for an extension of about 13 miles of road, connecting with the present road at Big Sur and continuing south along the coast. When the road is completed to a point near San Luis Obispo—a distance of something like 39 miles—this road along the coast will form one of the most scenic drives in the West. Some very fine bee ranges will also become accessible because of the new road.

Carmel Valley, a narrow valley reaching back about six or seven miles from the ocean along the Carmel River, is very fertile, and the settlers are just finding out that they have one of the ideal locations for the growing of pears. They are also finding out that there is great need of pollination and in every way encouraging the placing of apiaries near their orchards. Tracts of pears with several acres of one variety often had little or no fruit, while orchards set to several different kinds, when the trees were well intermixed, gave great crops. Now they often graft a limb of another variety in each tree or set a tree of another variety here and there throughout the orchard. One of these, with plenty of honeybees to work on the blossoms, is considered an assurance of a crop every year.

Continuing on our trip south, the honey crop gradually improved until we reached what is termed southern California, where in most cases satisfactory crops were harvested. A stop was made at Santa Maria, near where there are several hundred acres devoted to the growing of flower seeds. We did not get a chance to talk to any of the beekeepers and wonder if some of the varieties of flowers do not furnish a good flow of nectar.

L. L. Andrews.

Corona, Cal.



FROM NORTH, EAST, WEST AND SOUTH



In Texas.—The weather conditions during August, September and October have been adverse to beekeeping over most of the state. With the exception of the black-land cotton section there has been no honey flow since spring. The State Bureau of Markets made the announcement through the Associated Press recently that the honey crop of Texas was only 28 per cent of normal. Only two men, T. W. Burluson of Waxahachie and L. R. Nolan of Kerens report normal yields. These men report averages of 100 pounds each, all from cotton. Many beekeepers have thought their bees in good shape—only to find on examination they were without stores. This condition was brought about by the fact that brood-rearing was heavy in late August and September, and no nectar flow accompanied it. Many beekeepers report that there will be a heavy loss of bees in their yards this winter. In order to take advantage of all natural resources before feeding, many colonies were moved to the limestone hills as a flow from kinnickinnick commenced the middle of September. The flow lasted only a few days owing to the lack of moisture, and it is doubtful if the stores collected paid for the moving. At the present time, light and local honey flows are reported from oak galls and broom weed.

The laboratory building of the new apicultural substation, 12 miles southeast of San Antonio, is now completed, and the experimental work will be well under way by the first of the year. This building is of brick and cement, 36 by 42 feet. It contains office, instrument rooms and a large workshop. At present the building is one-storied, but it is built so that a second story can be added later. This substation was made possible through the efforts of the beekeepers and their friends in the state legislature, and it is the aim of these same men to make this the largest and best-equipped apicultural laboratory in the world.

E. B. Ault of Calallen made the announcement, through the state papers, of the organization of the Nueces Valley Apiary Co-operative Association, its object being to buy and sell bees, bee products and equipment.

It is seldom that beekeepers are interested in society notes, but the following are of interest especially in the South. Prof. S. W. Bilsing of A. and M. College, and Miss Alma Merwin of Iowa were married in September. Prof. Bilsing is well known as the foremost instructor in apiculture in colleges. Miss Merwin, who for several years was in the extension service in Texas, did much to interest women in beekeeping and in the use of honey. During the same month occurred the marriage of G. F. Aten and Miss Kate Saathof at San Antonio. Mr. Aten is

one of the owners of the Sunny South Apiaries, and Miss Saathof is the well-known treasurer of the Texas Honey Producers' Association.

Every little while some bits of information concerning honey ants come from the southwest states or Mexico, but we now find them at our very door. While digging gravel for the foundation of the apicultural laboratory we cut through a nest of these interesting insects. The storage insects hung to the roof of small cavities in clusters. Their abdomens were distended to a diameter of fully one-quarter of an inch. The dark honey they contained was from Brazil. It was a curious thing to see the Mexicans eagerly hunting for these honey-laden insects and eating them—heads, legs and all. After becoming acquainted with this ant we find it to be one of our most common species.

H. B. Parks.

San Antonio, Tex.

* * *

In Wisconsin.—The honey crop this year for the state as a whole turned out to be fairly good. With the exception of the southeastern counties and a few localities in the northern part of the state the crop has been good, possibly better than average. Although the state crop-reporting service estimates this year's crop at over 6,000,000 pounds, an increase over any previous year, indications are that it will all be disposed of before the winter is over.

Honey has been moving rapidly the last three weeks. Previous to this date (October 30) several fairly large producers have reported from one-third to one-half of their crop sold. The beekeepers have learned well the lesson of selling locally, and a large part of the crop is being handled in that way. One beekeeper reports having sold 1000 pounds by stopping at farm homes along a stretch of road 10 miles in length. There appears to be a variance in retail prices between localities where the beekeepers are well organized and where they are not. A few beekeepers everywhere sell at very low prices, but the majority in the well-organized communities are receiving from four to five cents per pound more than are those in the communities where no organization exists. This fact alone should be argument enough for strong local organizations.

The State Association is planning to maintain a honey booth at the Wisconsin Products Exposition to be held at Milwaukee, December 14 to 20. The individual beekeepers, local associations and supply companies in the state have been very generous in their support, and enough donations have already been received to insure the success of the project. The State Association meeting will be held in Milwaukee



FROM NORTH, EAST, WEST AND SOUTH



December 14 and 15 in conjunction with the Products Exposition. The chief discussion will center around the establishment of a state association label to be used on a standard lithographed pail. Many members have expressed a desire for these containers, and definite action will likely be taken at this meeting.

A local association was recently organized in LaFayette County. This is the 44th local to be organized in the state and the 33d to become affiliated with the State Association. A striking improvement is noted in Rock County where a local organization was formed last spring. Here the beekeepers have been holding monthly meetings and are planning to continue this program throughout the winter. Better beekeeping is being practiced now than formerly, and several beekeepers have expressed their intention of making a large increase next spring.

Bees are going into winter quarters in good condition, with the exception that many colonies are light in stores. Brood-rearing has extended much later this fall than usual, many queens continuing egg-laying through the early part of October. This provides large numbers of young bees, but leaves the brood-chamber destitute of stores. In many cases beekeepers fed sugar syrup for winter stores, early in the month, only to have it used up in brood-rearing. Where this was done, feeding had to be continued at a later date.

Many beekeepers who winter their bees outdoors are making the same old mistake of waiting until they have had several weeks of cold weather before packing instead of doing so before cold weather sets in.

Madison, Wis. H. F. Wilson.

* * *

In Northern Indiana.—Bees in northwestern Indiana along the Calumet and Kankakee river bottoms are in prime condition for wintering. Some apiaries in favorable locations secured approximately 100 pounds of surplus from heartsease and goldenrod and are strong in bees and heavy with stores. On the other hand, colonies on uplands are weak and short of stores. Unless feeding has been done, it is probable that winter losses will be large.

American foul brood has been prevalent in this locality during the season. However, state inspection work has been very thoroughly carried out, and we are hoping for better conditions in the future.

Local grocers are buying largely of western comb honey, shipped from Wyoming, Colorado and other distant points, at a price below cost of local production. Large motor trucks from Chicago and Gary make tri-weekly trips with potatoes, fruit and vegetables, and are now bringing in honey.

It might be interesting to know how much our Wyoming brethren get for a case of honey or how much of the consumer's dollar they receive after paying for cases, transportation, commission and peddler's profits. If beemen everywhere would thoroughly advertise honey in home or near-by towns and cities, or if state and national organizations would institute a systematic advertising campaign in every city and see that every grocer is constantly supplied, the demand would, without doubt, take care of the surplus; but if only occasionally a beekeeper or association stimulates demand by local advertising, outside products immediately flow in and nullify the effort. It costs money to advertise, and if results are to be obtained through organized effort we must get away from the idea of a fifty-cent or dollar membership fee. Will commercial beemen ever awaken to the necessity and importance of business organization?

Valparaiso, Ind. E. S. Miller.

* * *

In Western New York.—The season of 1922 for New York State has been peculiar; like that of 1921 the crop was very spotted. Contrary to early prospects, the better crops were realized in those sections where no crop was secured in 1921.

With very few exceptions no fall honey has been harvested, and bees are very light in stores for winter. Many beekeepers have fed as much or nearly so for winter stores as the surplus of early honey amounted to.

Goldenrod, asters and other fall wild flowers seemed plentiful and bloomed profusely. Bees worked them freely, but the hives did not gain in weight. Brood-rearing ceased nearly a month earlier than usual. Why these conditions prevailed I do not know, as the soil had plenty of moisture and the weather was moderately warm.

The honey market, although a little slower than a year ago, due mostly to the plentifulness of all kinds of fruits, shows a great deal more steadiness than it did last season, with not nearly so much price-cutting as then.

The production methods in beekeeping have made great progress in the last score of years. The methods of distribution and marketing of the product have received less attention, but surely they are more important. If beekeeping is to remain a good business, honey must be marketed at a fair and uniform price, that will yield a fair return on investment and a wage income for the operator that will compare favorably with the income of equally skilled labor in the industries.

Beekeeping is one of the most interesting pursuits, and most beekeepers love their work to such an extent that they would continue to keep bees and live on a very



FROM NORTH, EAST, WEST AND SOUTH



small income rather than to engage in some other less interesting vocation. But each generation is becoming more and more practical, and if we wish our children to follow us in beekeeping we must use all our efforts to establish beekeeping on a level that will compare favorably with other industries. This, in my humble judgment, can only be done by associated endeavors—not necessarily in the big central co-operative associations with their necessary large overhead and in some cases burdensome expenses, but rather in smaller corporations associated together in form similar to other successful industries, each maintaining its own sales organizations but selling at associated prices and each trying to make quality their greatest asset.

Our organizations, though loosely organized, have done much in stabilizing the honey markets, and the future is unlimited so far as we know. We can each do our mite, and, by collecting together, the mites are made mighty. The slogan of today is "Good Business." Let us all help to make honey production a good business.

Ransomville, N. Y. Howard M. Myers.

* * *

In Michigan.—This seems to be a season of price-cutting in the honey market. One large department store in Lansing has sold quantities of white honey in five-pound pails as low as 69c per pail. Repeated protests are received from members of the State Association that their neighbors are selling white honey at 75c per five-pound pail. This is folly.

On the other hand, a beekeeper is selling his crop of honey, house-to-house in Lansing at \$1.25 for a five-pound pail, which shows that the public is willing to pay the price provided quality is assured. Too many beekeepers are allowing their neighbors to set the price which they should receive for honey. Too many become overanxious to move their honey crop before Christmas.

One association member, who was moving honey satisfactorily at 90c for five pounds, cut his price to 75c to meet competition at the city market on Saturday. Much to his surprise his honey moved no faster at 75c than at 90c. How long will it take beekeepers to become familiar with the psychology of selling? We hear much, these days, of the comparison of honey prices with prices of farm produce in general. Although we must expect that the lowering of prices for farm produce suggests a reduction in the price for honey, the fact remains that many beekeepers have never yet received a fair price for their honey. The beekeeper should not sell his honey in retail packages at wholesale prices.

To assist beekeepers in determining approximately what they should receive for their honey a scale of prices was sent to

each member of the Association. It has been suggested that reports from a price-fixing committee should be mailed to beekeepers at the beginning of each month to keep them in close touch with conditions of the local honey market all the time.

However, there are two classes of beekeepers who cut prices—one because they do not know the actual market price and the other because they think they must sell cheaper than their neighbors to get rid of their honey. The former may be assisted through receiving information, the latter can only be helped by being supplied with a new point of view.

The weather this fall has been especially advantageous for the preparation of bees for winter. Judging from the volume of inquiries received for directions for packing, Michigan beekeepers are preparing their bees for a cold winter. As before, telegraphic reports will be sent to beekeepers, informing them of the proper time to place their bees in the cellar the latter part of the month. A year ago a number of beekeepers who wintered in cellars availed themselves of this opportunity.

It has been brought to our notice that ex-service men may secure licenses from county clerks for one dollar to sell house-to-house in cities. This is due to an act of Congress and holds good in all states according to our information. Since so many ex-service men are studying beekeeping throughout the country this service should be of real value to those who want to sell from house to house. In this connection some members of the Association have encountered difficulties in selling their honey in cities outside their own county. To settle the matter an opinion was secured from the Attorney General, which stated that so long as there was no question as to the honey being taken from diseased colonies, the beekeeper could sell his own honey any place he could obtain a market.

Although the fall honey flow was below average, few beekeepers in this locality needed to feed for stores. There is a growing tendency among beekeepers to use the Demuth feeder or even a deep hive-body for winter stores. We are urging plenty of well-ripened honey for stores in place of feeding sugar syrup in excess. Many are using the tarred-paper packing-case this winter.

A schedule is now being prepared whereby two-day beekeepers' schools will be held in approximately 30 counties during the coming winter. Each year the attendance at these county beekeepers' schools increases. Many beekeepers who can not spend time to attend conventions and state meetings will drive up to the county seat to the two days' program. Through the cooperation of the local papers these schools



FROM NORTH, EAST, WEST AND SOUTH



have a certain advertising value for local beekeepers.

However, the real benefit derived from these county conventions is the development of that "get-together" spirit which leads to the conception of true co-operation—the thing which is so badly needed in the beekeeping profession today.

East Lansing, Mich. Russel H. Kelty.

* * *

In Georgia.—The annual meeting of the Georgia Beekeepers' Association at Hopkins, on the edge of the great Okefinokee Swamp, on August 25 and 26 last, was a memorable one. It included a trip on a log train to "Billy's Island," 20 miles from Hopkins in the interior of the swamp. The railroad is built on trestles most of the way and is the only roadway into the interior of the swamp. Along the way we saw an abundance of good honey plants of all kinds peculiar to that region. The pepperbush (*Clethra anifolia*) was just going out of bloom and is about the last of a list of plants which should keep up a good honey flow from the first day of April to the first of September or later. I am afraid, though, that the swamp will not be occupied by scientific beekeepers for some time to come, as none will be likely to relish the prospect of having wild animals only for neighbors and of having to sit up nights disputing property rights with the numerous bears that are said to live there.

J. J. Wilder has a good many apiaries around the sides of the swamp. We visited one at Hopkins that was composed of black bees which had been transferred from trees and gums in that locality. One of our party, being an adept at such tricks and having a veil with him, opened a hive without smoke and took out a frame filled with delicious pepperbush honey. By the time we were through sampling it, there was not much left. The country around Hopkins is said to be very healthful, there being no malaria. When we returned from the swamp we at once took our cars back to Waycross where we held our final meeting at Mr. Wilder's plant.

We are informed that, through the vigorous efforts of our State Bee Inspector and the co-operation of those whose bees were infected with foul brood, this dread disease has been practically wiped out of our state. Little fear need be entertained of its spreading again, as the methods pursued for its eradication were heroic and effectual (fire treatment).

We have had a continuous, though slow, yield of honey in this section from June until now, due largely to the spread of Mexican clover, which seems to stand a drouth well and springs up fresh and green after a good rain. It will be in full bloom until frost kills it. There is much land here yet

to be covered with it, but as it makes good hay it will continue to spread rapidly.

Bees here, and probably all over the Coastal Plain, are in generally good condition for winter, and little, if any, feeding will be necessary except where artificial increase has been made late. The honey market in this region is practically closed as soon as new sugar cane syrup appears on the market, but the people begin to call for honey again in the spring some time before new honey is ready for market, so that those that have honey for sale can regulate themselves accordingly.

This year, as usual, our supply of honey gave out while the market was still good, but there seemed to be an unusual amount of honey on the market with prices about 10 to 12½ cents for light extracted in tins and 15 to 20 cents for comb honey. Chunk honey does not sell well in our market.

Norman Park, Ga. T. W. Livingston.

* * *

In Florida.—The drouth from which beekeeping in South Florida has suffered for the past two years has been broken. Heavy rainfalls during September and October have brought this section back to normal. If conditions remain as favorable as they are now, next season should show one of the record crops of honey.

The past two months have been a heavy drain on stores, as the bees have had little opportunity to work in the field. The fall crop will be light unless the bloom holds out later than usual. Beekeepers in this section must watch the stores of honey in the hives carefully and not allow their bees to go into the period of no nectar with an inadequate supply of honey.

Some beekeepers are complaining that the bees are rearing brood too heavily just now. All bees in this section are carrying on extra heavy brood-rearing for this season, and what honey is being brought in is going into bees instead of into the supers. They need not worry, however, as the honey that goes into young bees now will be returned with heavy interest by the bumper colonies next season. Beekeepers must watch now or many colonies that were too closely harvested in the summer will run short of stores before the nectar flow opens in the spring. All colonies in this section of Florida are now in better condition than they have been at any time during the past three years.

The past season the black mangrove was again a failure among the Keys, but coral sumac or poisonwood, false dogwood, mastic, white mangrove and buttonwood furnished a fair crop of honey. These plants are always a dependable source of honey on the Keys and seldom fail to produce their share of the surplus. All these plants produce an



FROM NORTH, EAST, WEST AND SOUTH



almost white honey unless it is allowed to ferment on the hives before it is removed.

A mistake that has crept into the literature of the honey flora of the Florida Keys, and is often quoted, is the credit given to manchineel as a source of surplus. Manchineel (*Hippomane Mancinella*) is often mentioned as a valuable honey plant of the Keys. A search for this tree, during the past three years, among the Keys from Miami almost to Key West, has failed to disclose a single specimen. It is credited with growing here but must be very rare, as it is unknown to the natives living on the Keys.

Coral-sumac or poisonwood (*Metopium taxiferum*) is a common tree and a bountiful honey-producer. While the sap is poisonous to some people, it is not nearly as much so as the poison ivy. No doubt due to the common name, this plant has been confused with the manchineel, which is said to be the most poisonous plant that grows, but which is too rare to be classed among the honey plants of the Florida Keys.

Miami, Fla.

C. E. Bartholomew.

* * *

In Louisiana.—“The bees have about ‘knocked off’” doing work in this locality for the honey season of 1922. However, goldenrod, thoroughwort, white heartsease and asters are still at work producing nectar in the lower part of the state and will be until December, as there has been no frost as yet. The honey season in Louisiana spreads over 10 or 11 months, beginning early in January with the soft maple and ending with the above-mentioned flowers. As a whole this has been a good honey year. The producers who assisted their bees when they needed assistance have made large crops of honey, and they wear the smile of contentment which rightfully belongs to them. Quite a number of beekeepers measure this season’s work by counting the crop in hundreds of barrels.

The late fall honey flow has been good, and the fine weather has enabled the bees to store all the food they may need to carry them through to spring. As a whole, the bees are in better condition to winter than they have been in for years, and this, of course, insures a fine crop in the spring from willow, tupelo gum and white clover, provided weather conditions are good.

The pound-package business has been greater this past year than ever before, and some record-producing queens have been shipped from Louisiana to our northern brother beekeepers. The coming season will be a fine one in this respect, and beekeeping in Louisiana will, no doubt, be very profitable to the man or woman who tries to make it so.

E. C. Davis.

Baton Rouge, La.

In North Carolina.—Beekeepers generally are getting their apiaries settled for the winter in a fairly satisfactory condition, but many are finding it necessary to feed more than had been anticipated. This is due particularly to quite a disappointingly light flow of nectar in the fall flora. This has been especially true in the eastern section of the state. However, taken all in all, conditions just now in this state are fairly satisfactory both as to the present status of the bees and as to the outlook for a good honey season next year.

In the recent State Fair in Raleigh (October 16-23) there was, in the Bees and Honey division, an exhibit of 278 pounds of honey, all of No. 1 type, both extracted and comb honey in glass, representing the production of a single colony this season. This was in the general apiary products display of the Lower Cape Fear Apiaries, W. J. Martin, Wilmington. It took the blue ribbon and special first cash premium award for the biggest single colony yield this season in the state. However, in all the nine yards constituting this chain of apiaries, there were scarcely a dozen colonies that anywhere near approached this yield.

This display of high single-colony output at the State Fair is having an especially important bearing on the campaign that has been on for several years to induce beekeepers to transfer their bees from the old gum and box hives to the improved hives and give close and intelligent attention to them. The fact was stressed in this exhibit that three years ago this “big yield” hive, along with 150 others, was transferred from the gum hive into the Standard “Root Model” ten-frame hive and that this splendid yield is the direct result of the improved quarters and better attention the bees are receiving. Three years ago C. L. Sams, Government Bee Specialist, directed the work of transferring these bees from the gums. At the Fair he procured a splendid photograph of the display of the honey from the single colony. This picture, together with pictures of the gum hive from which the bees were transferred to the Standard hive, and this improved hive, as it stood with its big stack of supers before the honey was taken off, will go to Dr. Phillips, of the Bureau of Entomology, Washington, D. C. They are to be used in making lantern slides to impress upon beekeepers who still have bees in gums and boxes the advantage that comes from transferring them into the standard hives and giving them intelligent attention.

The students in the Bee Culture division of the State College, directed by J. E. Eckert, professor in charge, installed for the State Beekeepers’ Association an excellent



FROM NORTH, EAST, WEST AND SOUTH



exhibit of honey and general apiary products that added much to the success of this feature of the State Fair, which is coming more and more each year to prove especially attractive to the many thousands of State Fair visitors.

W. J. Martin.

Wilmington, N. C.

* * *

In Porto Rico.—The paragraph by J. E.

Crane, October Gleanings, page 649, in reference to gentle bees, interests me. This is nothing new for the elder beekeepers to discover. Dr. Miller joined this branch of beekeepers some years before he left us for good. Alley and Pratt (better known by his *nom de plume* of "Swarthmore") advocated this class of bees 15 to 20 years ago. Not only did they advocate gentle bees but they bred them, and their joint strain is still in demand.

The season in the hill districts of Porto Rico has been a very disappointing one. The first part of the year we had far too little rain, and the latter part, too much. It has been raining almost daily over the central, northern and eastern sections of the island, with quite a bit of rain at the western side. During the last week of September we had over five inches in the Aibonito section. On October 14 we had over three inches in less than three hours.

The honey is now being extracted in the hill districts. In many apiaries all kinds of robbing are taking place on account of the method of extracting. It is not unusual for the peons who do the work to take off two or three thousand pounds, put it in the extracting-house, and when the combs are extracted put them right on the hives. This naturally causes robbing. I have gone into apiaries while extracting was being done and seen from a pint to a quart or two of bees in front of every hive, the apiary in an uproar and much robbing going on. In the apiaries operated by me we pursue a different method. Daily six to eight hundred pounds are removed early in the morning before the bees are flying to any extent. We do not remove the entire super—only take out the combs to be extracted, shaking and brushing off the bees and putting the combs into covered carrying boxes. This honey is extracted during the day, and at dusk the combs are returned empty where they came from. By the next morning all combs are cleaned up and the bees have forgotten about cleaning them up. Hence we have no robbing.

There is quite a bit of conjecture here as to what effect the placing a tariff of 36c a gallon on all honey imported into the United States will have on the price of the Porto Rican product. Our honey has been selling for months for less than crude sugar. It is supposed by the beekeepers here that this

new tariff will eliminate most of the South American, Central American, Mexican and West Indian honeys. If this is the case there will likely be quite a shortage of the grades of honey used by the bakers, confectioners and manufacturers of remedies containing honey. This will presumably run the price of the cheaper grades to the point where the invert sugar preparations, or some other substitute will meet it and hold it stationary.

Aibonito, Porto Rico. Penn G. Snyder.

* * *

In Ontario.—Bee work for the season is at this date (November 6) practically over here in Ontario. While we often think that the South has many advantages over the North so far as beekeeping is concerned, yet the advantages are not all one way by any means. Our super combs are now free from moth attacks till next June at the earliest, and practically nothing is needed in the way of caring for the bees till next May. Of course this is assuming that all necessary work has been done this fall; and even if this work has been neglected, nothing that we can do later on will help matters much, unless it be in the way of feeding early in the spring to avoid having colonies starve. But that is a condition to be avoided by all means, if possible, as a few experiences in that line have fully proved to us in the past.

Generally speaking, now that conditions are fully known, Ontario has been blessed with a fine crop of honey for the season just passed. Quality, as a rule, has been well up to the usual standard of excellence that we look for in Ontario honey. The market for honey is still dull, but I look for an improvement after the holidays when fruit is coming on the market in less quantities than at present.

Personally, we have sold out all our crop, and our two grown-up boys are away in the northern woods for a two weeks' outing. And I might as well confess that this is being written just a few hours prior to the departure of the *paterfamilias* on a similar expedition. As I have not been off on a holiday of this nature for about 20 years, this will be my excuse for once more lapsing into a habit acquired in youth, but one in which I have not gratified those tastes for so long a time.

Soon after this is in print, the annual convention of the Ontario Beekeepers' Association will be a thing of the past. While I have not yet seen a program, there is all likelihood of a bumper attendance as a good season generally means a good turn-out at the annual meeting. As a matter of fact, whether crop is good or poor, we always have a fine attendance, and this year is not likely to be an exception to the rule.

Markham, Ont.

J. L. Byer.

HEADS OF GRAIN FROM DIFFERENT FIELDS

Nectar Secretion at High Altitudes. Here is a picture of the San Francisco peaks near where my bees are located and close to Flagstaff, Arizona. The highest point is a little over 12,000 feet above sea level or nearly $2\frac{1}{2}$ miles high. The snow stays on the tops the year round, and in places it is 30 feet deep. The bees make much more honey around the mountains than they do on the plains, for at this altitude the atmosphere is so cool that when the wind blows the clouds against the mountains the cool air causes the water to form in drops, thus bringing rain. I have noticed that it rains much more around the mountains than on the plains. These showers and the lower temperature cause the nec-

red and dark-pink book, but did not touch any of the others, although there are bright-blue, green and brown books. I also noticed that bees went to the bookcase flying up and down the glass. Here, of course, I could not see any picking out of any particular color; but it remained considerably longer at the bookcase than at any other piece of furniture in the room. If the bee, to all appearances, is able to distinguish the colors of books, then it is surely also able to distinguish the colors of flowers, which, I understand, has been disputed. I had plenty of time to follow the doings of the bee, I am sorry to say, having been down for five weeks from a broken leg.

St. Thomas, Virgin Islands. Axel Holst.



Winter scene in Arizona. San Francisco peaks in the distance. The richest bee-trees were found at higher altitudes on the mountain slopes.

tar to rise in the bloom in great quantity. The closer to those foothills, the more nectar there is in the bloom. I know this by finding bee-trees. Some I found at an elevation of over 10,000 feet were the richest of all. One had 22 gallons of comb honey which weighed 220 pounds.

Flagstaff, Ariz.

S. M. Campbell.

Bees Distinguish Colors. We received two nuclei of bees from Missouri,

and had them placed inside the house to have them sent out into the country during the cool of the night. One of the boxes started to leak a few bees which were soon sitting around in the house, nosing all about. I noticed that one bee went to a bookstand where I have some books standing and lying, and it struck me that the bee went distinctly to each single

Large Yields in South Dakota. There is a Methodist preacher up in South Dakota who

takes his recreation in bee-keeping and has a lot of fun out of it. Not long ago he was driving home from seeing a sick man, and ran into a swarm of bees. The bees covered the car and were all over the preacher. He stopped his car as soon as he could, and watched the bees. He saw that it was a very large swarm and decided to follow them. They soon settled on a tree. He went to the home of the owner of the land and told his wife about the bees. She threw up her hands and shouted at him: "Take them away, I don't want them at all!" The preacher told her to see that no one got the swarm, while he went to town for a hive.

That swarm was too big for the hive. He took a beeman out with him the second trip, and both of them decided to put on another

HEADS OF GRAIN FROM DIFFERENT FIELDS

hive-body. That proved too small, so a super was put on, to make room for all the bees to get inside of the hive.

Of course everybody knows that when a man starts to raising chickens or strawberries, or goes fishing or hunting, or raises bees, he is immediately classed among the world's greatest liars. But the writer will vouch for the truthfulness of the amount of hive room required to put the bees of that big swarm inside. It may be that there were two or three swarms united to make the big swarm, but the preacher successfully got them inside. Then the fun of putting supers on began. That swarm made 320 filled sections of comb honey, 71 pounds of extracted honey, and is going into winter quarters with plenty of stores for the winter.

Chad Dixie.

How Bees Use Their Wings. The following interesting information appears in an article, "Marvelous Secrets Revealed by the Microscope," by Richard Kent in the October issue of The American Magazine, page 46, third column, next to last paragraph:

"How many wings has a bee? Four. But how many wings has a bee when it flies? Under the microscope we see that the bee has a clever device for uniting its front and hind wings during flight. On the front edge of the hind wings, the microscope shows us a row of tiny hooks; and when a bee starts to fly it hooks these wings to a ridge on the hind edge of the fore wings, so that, for flying purposes, the bee really seems to have but two wings."

Chicago, Ill.

Geo. J. Griessenauer.

Skyscrapers in an Australian Desert. We are having another droughty season in Australia, yet honey and wax are very low on the market on account of the importation of a cheap article or substitutes from abroad. The beekeepers realize the seriousness of the situation and are trying to amalgamate into a co-operative society or at least are trying to work together



Not so high as some North Dakota skyscrapers, but these are in a desert. A spider is induced to make its home in each of the tins on top of the posts supporting the hives as protection against ants.

with a powerful co-operative association here, the Coastal Farmers' Co-operative Company. Being only a side liner and residing in the desert part of New South Wales, where beekeeping can be carried on only as a hobby, I take great pride in my skyscraper which is shown in the illustration. Think of skyscrapers in a desert, where herbage is rarely seen, where there are no rivers, no springs nor wells, but only rain water collected by artificial means!

A. Volkofsky.

Olins, Wilcannia Rd., Cobarr, N. S. W.



A small artificial lake for collecting rain water in a desert region of Australia, which is the source of Mr. Volkofsky's water supply.

HEADS OF GRAIN FROM DIFFERENT FIELDS

Folly of Cutting Prices. We are having the price-cutter with us again. One large beekeeper is selling honey at \$1.50 per 10-pound pail at retail, where it had been \$2.00, and another in a small town not far distant is reported retailing comb honey at 20c per section. I had been getting 40c per section but could not sell any more as they told me I was too high. I cannot sell extracted honey now either, since they think I ought to sell it at \$1.50 per 10-pound pail, but I cannot see it that way yet. I still am able to sell comb honey through one of our stores at 35c per section, but it moves rather slowly.

I had only a little honey left but had planned to buy and resell after disposing of my crop, yet if I must give 12c to 15c per pound, pay freight, buy containers and repack, I don't see where I can get out even, to say nothing of pay for my trouble.

The reason I wanted to do this was to have a steady supply the year round, so as to have the public accustomed to getting it any time and thus create a better demand, since anything constantly on the market will eventually be used in larger quantities, and so when I have more honey to sell in the future I will have a market worked up for it. But what's the use? Nic. Klein.

Hudson, Iowa.

An Experiment with American Foul Brood. I have been experimenting with brood diseases, and have some interesting results. I first took a colony having American foul brood in its worst stage and set it on top of a healthy colony above a screen. The colony below took the disease (about 60 cells) in the first 50 days. Thinking that the germs fell down through the screen, I tried it with the diseased colony below with a screen over it, then an empty hive-body, then another screen, then the healthy colony above. I found 50 to 60 cells of American foul brood in 40 to 50 days. Charles S. Kinzie.

Arlington, Calif.

How to See Inside of the Winter Cluster. I have a glass top on almost every hive and will soon have one on every hive. The hive cover is 16 $\frac{1}{4}$ x 20 inches and the glass is 14 x 16 inches. Over the glass I always have a nice cushion or two, sometimes three, for winter. The cushions are about the size of an ordinary feather pillow and about three inches thick. I fill these with feathers or cat-tails that grow in wet places. During cold weather the bees under the glass look as if the pane of glass were in the middle of the cluster and the top half of the cluster removed. There is a ring of bees from one to two inches thick all around the cluster tight against the glass

(the glass being an inch above the top-bars of the frames), and the inside is from $\frac{1}{2}$ inch to 1 inch below the glass, the bees gently moving over and under each other. The outside bees move but little, though none are asleep.

Talk about interest in bees! It is great fun to watch the inside of a cluster.

Hammondton, N. J.

C. E. Fowler.

Honey in Automobile Radiators. I made a mixture of different kinds of honey and placed it in the refrigerator of an ice cream company and below are the results:

Clover honey, one-half honey, one-half water, froze solid at about 10 degrees above zero. Clover honey, two-thirds honey, one-third water, froze quite solid at 10 degrees below zero. Fruit bloom and raspberry, two-thirds honey, one-third water, froze at 10 below zero. Clover honey cappings, two-thirds honey, one-third water, that had been through an Armstrong capping-melter, froze at about zero. An extra-good quality of buckwheat honey, two-thirds honey, one-third water, did not freeze at 12 below zero. In no case were the bottles broken.

I am now using honey from the capping-melter in the above proportions in my Ford truck and it keeps the engine perfectly cool.

Perhaps Gleanings could assist in getting reports from others and help make a market for a great quantity of honey for automobile radiators. Joseph E. Palmer.

Markville, Ont.

Wintering in Two Stories. Heretofore it has been my custom to reduce each colony to one story in the fall; but last year I decided to winter them in two stories, leaving more than enough honey for their needs. The expected result was exceptionally strong colonies this spring; and, as we had a heavy locust flow, practically three-fourths of the crop will consist of this honey. However, after the locust bloom was over, the unwelcome honeydew made its appearance.

Cincinnati, Ohio.

Albin Platz.

To Prevent Bees Crawling Up Sleeve. Every beekeeper knows how annoying it is to have a bee crawl up his sleeve and sting his arm, especially in the fall when the bees are cross. To prevent it take a piece of cotton twine 10 inches long, tie a loop in one end, pass the loop over the button at the wrist, fold the wristband around snugly, wind the string around it once and around the bottom twice. It will stay till you take it off, and no bee can crawl up your wrist.

Plainfield, N. J.

B. C. Whitney.

HEADS OF GRAIN FROM DIFFERENT FIELDS

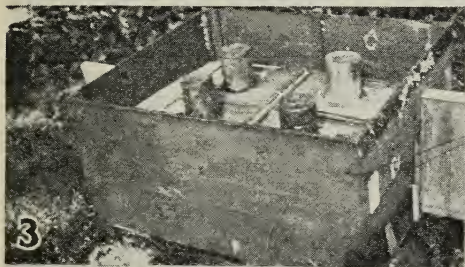
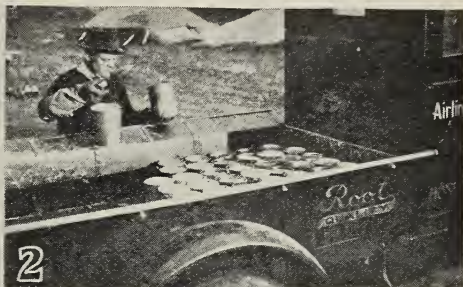


Fig. 1.—Filling ten-pound pails with hot syrup for outyard feeding. See Editorials.

Fig. 2.—Loading pails of syrup on a light Ford truck which is driven to the outyards and down between the rows of hives, and then unloaded from hive to hive.

Fig. 3.—Ten-pound feeder pails turned upside down over the hole in the super-cover board before the colonies are finally packed for winter.

Fig. 4.—In order to make the ten-pound pails work satisfactorily as feeders it is important to have only about thirty holes in the cover, each a scant 1/16 of an inch in diameter. If the holes are too large, or if there are too many of them, the syrup will run out so freely as to cause a smear on the super-covers, resulting in robbing as shown in the pail at the left.

Fig. 5.—All the weak colonies at Medina are brought home from the outyard, and placed, for the purpose of feeding and uniting, in pairs. After uniting they are put into the cellar.

Fig. 6.—Small truck ready to take the bees into the A. I. Root Company's 500-colony cellar.

Fig. 7.—It is getting to be more and more the custom in California to winter in two-story hives. The upper story is usually filled with good honey stores, when the bees are ready for winter.

Fig. 8.—A small log-gum apiary in North Carolina. Old beekeepers using these gums say that hollow logs with thick walls like those here shown are much better for wintering than the ordinary box hive made of thin lumber, and no doubt they are right.

QUESTION.—What is the food value of honey compared with that of beef or eggs, or some of the other staple foods?

H. O. Leopold.
Pennsylvania.

Answer.—In comparing the food value of honey with beef and eggs it is important to remember that beef and eggs contain a high percentage of protein, which can be utilized in the body in repairing worn-out tissues, while honey does not contain protein but is an energy-producing food. Honey should therefore be classed with the fuel foods which supply the body with energy and not among those whose function it is to build and repair the body—that is the “tissue-formers” as they are sometimes called. The energy value of honey is about 1485 calories per pound. The energy value for eggs is about 635 calories per pound, and that of beef ranges from about 545 calories per pound up to about 1100 calories per pound, according to the cut.

Head and Mouth Parts of Queen Bee.

Question.—How do the head and mouth parts of the queen bee differ from those of the worker?
Illinois. F. Robert.

Answer.—The head of the queen bee is smaller than that of the worker. It is more nearly round in shape instead of somewhat triangular in shape as that of the worker, the head of the queen being wider in proportion to its length. The mandibles of the queen are notched instead of being smooth like those of the worker. The parts of the proboscis are much shorter in the queen than in the worker. In general the mouth parts of the queen bee suggest weakness when compared with those of the worker. The reason for this is not difficult to understand when it is remembered that the queen bee, while capable of feeding herself to a certain extent, is usually fed by the workers.

Honey from Colony Having European Foul Brood.

Question.—Our bees had European foul brood last summer, and we requeened with pure Italian queens. By fall all of the disease had disappeared. We have some extracted honey left over which was taken from these colonies. Can this be fed back to the bees next spring without danger of again produce the disease?

New Hampshire. Albert & Wesley Campbell.

Answer.—The organism which produces European foul brood (*Bacillus pluton*) if present in honey will be destroyed within a few months while in storage. Apparently these organisms are not able to live long when suspended in honey. Several years ago Dr. G. F. White, Bureau of Entomology, Washington, D. C., introduced these organisms into honey which was allowed to stand at room temperatures but shielded from the light. Samples of this infected honey were taken from time to time and fed to colonies of bees. All colonies that were fed honey containing this organism developed Euro-

GLEANED BY ASKING

Geo. S. Demuth

pean foul brood during the first few months, but after seven months no disease was produced. The results of this experiment are recorded in the

United States Department of Agriculture, Bulletin No. 810. In your case the honey which you extracted from the colonies having European foul brood will be in storage more than seven months before you will have occasion to feed it, and should therefore be safe. In case of doubt you can render this honey safe for feeding by diluting it with water, then heating it to kill the organisms. If the diluted honey is heated to the boiling point or nearly to the boiling point for 10 or 15 minutes the organisms should be killed. It must be remembered that these statements are for European foul brood and not for American foul brood. In the case of American foul brood the organism (*Bacillus larvæ*) is spore-forming and therefore much more resistant.

Size of Tunnel for Winter Packing-Case.

Question.—In packing my bees I use a small tunnel $\frac{3}{4}$ inch high and 2 inches wide for the opening. I find one colony has an unusual number of dead bees in this tunnel, and I am inclined to believe it is not large enough. If the tunnel becomes clogged up with dead bees, will the remaining bees in the hive smother?

Wyoming.

C. N. Andrew.

Answer.—It is safer to use a large tunnel through the packing and then reduce the size of the entrance by closing the opening in the outer case. Many who use winter packing-cases build a tunnel at least an inch deep and six or eight inches wide. By using a deep tunnel and closing down the opening in the outer case, a vertical opening about $\frac{3}{8}$ of an inch wide and from 1 to $1\frac{1}{2}$ inches high can be made. With such an entrance the dead bees would have to be piled quite deep before the opening could be closed entirely. It can be arranged so that the entrance can be easily enlarged in the spring when the bees need a larger entrance and before time to remove the winter packing-case. The danger of the entrance being clogged by dead bees depends upon the number of old bees in the hive at the beginning of winter and the character of the winter. Colonies which go into winter with a large proportion of old bees often show a rapid death rate during the early part of the winter. If the winter is mild and the bees are able to fly at frequent intervals, they may be able to carry out the dead as fast as they accumulate, but if the weather prevents the bees from carrying away their dead they may drag them into this passageway in large numbers. If the entrance should become entirely closed by dead bees, the colony finding it is imprisoned becomes greatly excited and is liable to be smothered. As long as the bees do not discover

that they are in prison they will have a sufficient supply of oxygen, but when they are excited over being imprisoned they become very active and consume oxygen rapidly.

Management Suited for Different Localities.

Question.—Can you explain to me in what way the management of the bees should differ in California from that in the East?

California.

F. N. Chamberlain.

Answer.—In working out the system of management suited to any given locality the important thing to keep in mind is the time of the main honey flow in reference to the natural period of extensive brood-rearing in the spring. When the bees build up to great strength during the heavy brood-rearing period of spring and the main honey flow comes at about the time the bees have reached their greatest strength, the management of the colonies will be similar to that of the white clover region. When the main honey flow does not come until some time after the bees have reached their greatest strength in the spring, we have another type of location. This is the type found in much of the irrigated regions of the West where alfalfa is the chief honey plant. Where there are several honey flows during the season that are of equal importance, each yielding a surplus, we have still another type of location calling for different management. It will be thus seen that the securing of a crop of orange blossom honey in southern California calls for management quite similar to that of securing a crop from white clover or alsike clover in the northeastern part of the United States, since in both cases the main honey flow comes on at about the time the colonies first reach their greatest strength in the spring. In fact, the problem in each case is that of having the colonies in such condition that they are able to build up in time for the honey flow. The management after the honey flow may be entirely different in southern California from that of the clover region, because many beekeepers in southern California after securing a crop of honey from orange blossoms move their bees to the sage regions for the crop of sage honey. Those who are located where their crop comes almost entirely from sage will find their problem somewhat different because the honey flow comes on later.

Noise Made by Bees in Cellar.

Question.—Should the bees become absolutely quiet in the cellar? If not, what degree of quietness is considered normal?

W. L. Crites.

North Dakota.

Answer.—Bees are never absolutely quiet in the cellar. When wintering well there will be a low contented hum when many colonies are together in the bee-cellar. Within a few days after the bees are put into the cellar they should quiet down so that no bees will be seen crawling about the entrances, and there should be none flying out into the cellar. The bees should be quietly clustered, and those on the outside of the

cluster should remain almost motionless, not being easily disturbed even when a lighted candle is brought near them. Later in the winter, a larger number of bees will fly from their hives into the darkness of the cellar. These are old bees leaving the hive, and if the cluster is quiet this need not cause alarm. Quiet in the cellar during winter depends, to a large extent, upon the bees having a good cleansing flight just before being placed into the cellar. It also depends very largely upon the character of the winter stores. If the winter stores are poor so that there will be a large accumulation of undigestible material in the bees' intestines, they will become increasingly restless as the winter progresses.

Purpose of Metal Rabbits.

Question.—What are the tin rabbits for that belong to the brood-chamber? It seems that I can get along without them.

Harold Hanson.

Minnesota.

Answer.—The tin rabbits are used to prevent the bees from propolizing the projecting ends of the top-bars to the hive, thus making it easier to handle the frames. By holding these projecting ends a bee-space above the shoulder in the end of the hive, the bees can pass under them and so do not propolize them much unless the rabbit becomes filled with propolis. Some do not use the tin rabbits, but in this case the rabbit in the end of the hive must not be cut so deep. If the rabbits are cut deep enough to allow for the tin, the frames will drop down too deep in the brood-chamber, leaving too much space above them.

Leaving Cellar Door Open During Winter.

Question.—My bees are apparently doing well in the cellar with the cellar door open. Should I leave it open during the winter?

Montana.

James Spray.

Answer.—There is no more reason for the light's disturbing the bees in the cellar at this time than at the same temperature outside, but it will be difficult to maintain the proper cellar temperature if the door is not closed during cold weather. Bees will remain quiet early in the winter under conditions which, later in the winter, would cause great excitement, resulting in many bees leaving their hives. For this reason it is better to keep the cellar dark, especially during the latter part of the winter.

Saving Unsealed Honey for Spring Feeding.

Question.—I have some brood-combs filled with honey which is not capped over. Should I use these to feed the bees in the spring?

Idaho.

N. C. Larson.

Answer.—If these combs can be kept until spring without granulating they will be excellent for feeding the bees at that time. They should be kept in a heated room during winter to prevent the honey from absorbing moisture and to reduce granulation. On account of the tendency to granulate in the combs of much of the late-gathered honey of your locality, it may be better to extract this honey and then feed it back to the bees in the spring.

ONCE I read in a book that a Roman emperor asked one of his generals, who was 75 years old, how it came that he looked like a man of 30 years.

'Oh,' said the general, 'that is quite simple; for the outside oil and inside honey.'—Mrs. G. J. Riesener, Baltimore County, Md.

"Will welcome the day when famous Hubam clover is planted everywhere. We believe it will do unusually well here,"—Mrs. H. C. Eagerton, Berkeley County, S. C.

"The greatest trouble with our honey market is that it is being flooded with honey offered in retail at wholesale prices. It is mostly small beekeepers who do this. It hurts mighty badly."—P. C. Ward, Todd County, Ky.

"From Sept. 10 to Oct. 5 we had a good honey flow from heartsease. The colonies are now strong in young bees and heavy with the supply of winter stores—quite different from Sept. 1."—Charles D. Mize, Sedgwick County, Kan.

"I had to feed my bees this fall in my large hives. So I would if I had 11 Jumbo frames. Where hives are stacked up two or three stories high there is not a drop of honey in the lower story."—V. Berrien, Ulster County, N. Y.

"The honey crop here was a total failure. We extracted about 10 pounds per colony after leaving plenty of winter supplies, but we will have to feed this back if we have a late spring."—A. D. Brown, Sheridan County, Wyo.

"I was looking through my hives and found something unusual, at least to me. I raised out the center frame to look for young brood and in each cell there were four eggs. That put me to looking for queens, and I found two. They seemed to be happy together in the hive and were laying all right."—William Nickens, Lewisburg County, Tenn.

"The honey crop in this section of the state was an entire failure as regards surplus. The little honey that we harvested in the early summer from white clover will not more than pay for the sugar for winter stores. Since the 20th of July our bees were merely able to exist on the nectar from the fields. Some colonies did not have over five pounds of honey in the hive in October, in face of the fact that they have been enormously strong in bees right along. I have never experienced such conditions since I entered the business five years ago."—Harold A. Breisch, Schuylkill County, Pa.

"Last fall I found a bee-tree that had 271 pounds of honey. This was a white ash tree about two feet in diameter at the stump, and the bees were up about 30 feet. They

BEES, MEN AND THINGS

(You may find it here)

had built comb up and down in this tree for 23 feet and had three places where they went in and out. The cavity in this tree was about ten inches in di-

ameter. I have found many bee-trees that had comb built 9, 10 and 11 feet long."—H. R. Neumann, Marathon County, Wis.

"Thirty-five miles of bee pastures with 700 acres of Hubam clover, which is reported to yield 200 pounds of extracted honey per acre; 200 times 700 equals 140,000 pounds of honey at 30c per pound; 140,000 times 30c equals \$42,000. This will be for the coming year."—Quite an Optimist. (Mr. Optimist forgot to figure the value of his increase.—Ed.)

"We have one thing here I am sure will be an advantage to us and that is European foul brood. It is ridding this section of black bees. In a short time they will all be gone. Our Italians don't become infected. About two months ago I inspected about 10 colonies of black bees, and all had European foul brood but one. For the last six years in this section about 200 colonies of black bees have been destroyed by foul brood, but so far not a single colony has been hurt of the Italians."—E. T. Maxwell, Decatur County, Tenn.

"Bradford County leads the other counties of Pennsylvania in the production of honey. There were 6729 hives in the county last year, and an average income per colony was \$6.50. This makes the entire yield in the county \$42,738.50. So, beekeeping in Bradford County is quite an enterprise. Ten years ago beekeeping was a thriving industry throughout the state, but the spread of foul brood wiped out thousands of colonies. With the improved methods for fighting bee diseases the industry has once more become profitable, with the result that thousands of new hives are being placed in the state annually."—Phil Browning, New York.

"On one occasion this season at the Government Apiary, at Wauchope, there was proof that, at least on some occasions, bees do transfer eggs to embryo queen-cells. A few queen-cell cups used for queen-raising were left above an excluder on a colony that was about to swarm. On examination after the fourth day, one of the cups was found to contain an egg—an egg, moreover, in a fertile condition, for it eventually produced a queen bee. In this case it seems probable that the egg was transferred from the lower story where the queen was in occupation—both the color and breeding of the queen point to this."—Farmers' Bulletin 129, Department of Agriculture, New South Wales.

IN an effort to introduce Hubam in Germany, Paul Ranft, Leipsig, Oststr. 39, Germany, is anxious to receive small donations of seed, which he proposes to distribute to beekeepers in small packages free. Donations may be sent direct to the above address.

* * *

A French edition of the "Dadant System of Beekeeping," by C. P. Dadant, has just been issued in Quebec.

* * *

The Division of Crop Estimates states that the average yield this season has been 53.8 pounds per colony, as compared with an average of 44.2 pounds last year. Production this year is estimated to have been divided as follows: Comb, 28.7 per cent; extracted, 59.7 per cent; chunk, 11.6 per cent.

* * *

Frank C. Pellett, Associate Editor of The American Bee Journal, reports that he is back at work again after an experience in a hospital where he underwent a surgical operation. Mr. Pellett is expecting greatly improved health as a result of the operation.

* * *

The next international congress of beekeepers will be held in Quebec, Canada, in September, 1923. This will afford an opportunity for beekeepers of this country to meet with beekeepers from the rest of the world. The last international congress of beekeepers was held at Marseilles, France, Sept. 18 to 20, 1922.

* * *

After 10 years of rest, George W. York, former editor and publisher of the American Bee Journal, has again returned to the field of journalism, having launched a new bee journal upon the apicultural seas. "York's Bees and Honey" is to be published monthly at Spokane, Wash., the October-November issue already being in the hands of its readers.

* * *

We have received a series of interesting entomological picture cards from the Bildarchiv-Gesellschaft, Freiburg, Breisgau, Germany, illustrating the reactions of honeybees to various colors. These photographs were made from original negatives by Prof. K. von Frisch of Rostock, and also by Prof. A. Kühn and Max Pohl of Gottingen. Those who are interested in the study of the reactions of bees to colors can no doubt secure these photographs from the above-mentioned society.

* * *

R. L. Parshall, Irrigation Engineer, Colorado State Experiment Station, discussing the deficiency in the water supply for irri-



gation in the Arkansas and Platte River Valley, says that at the present time the prospects for irrigation water for the coming year are not at all

encouraging for this region. His report is rather discouraging for beekeepers in that section for next season, but an abundance of snow in the mountains this winter would greatly improve the situation.

* * *

Geo. W. York, Spokane, Wash., who for 20 years was editor of The American Bee Journal, has donated his entire collection of bee books and other beekeeping literature, which he was 40 years in accumulating, to the University of California. The University in accepting this valuable gift has decided to establish the George W. York Library of Apiculture of California.

* * *

Due to the conflict in the dates of meetings of the Western New York, Northern New York and Ontario beekeepers, the Empire State Federation of Beekeepers' Co-operative Association, Inc., has decided to change the date of its meeting to Tuesday, Wednesday and Thursday, Dec. 12, 13 and 14, instead of Dec. 5, 6 and 7, as announced in our last issue.

* * *

The Department of Agriculture of British Columbia has compiled data of the number of apiaries, colonies of bees, and crop of honey in that province for 1922. Figures are given for the several districts within each of the following divisions: Vancouver Island and Gulf Islands, Greater Vancouver, Lower Fraser Valley, Upper Fraser Valley and Chilliwick, Okanagan, Shuswap and Thompson Valleys, and the Kootenays. The total number of apiaries reported is 2143; the number of colonies, 11591. The crop in pounds is reported as 711356, the average per colony being 61.

* * *

The New York State College of Agriculture, Ithaca, New York, has announced a short course in beekeeping to be held February 20 to 23 inclusive. The major part of the instruction will be given by Dr. E. F. Phillips, Bureau of Entomology, Washington, D. C., and Geo. S. Demuth, editor of this journal. These men will be assisted by Geo. H. Rea of the A. I. Root Company, E. W. Atkins of the G. B. Lewis Company, and R. B. Willson, Extension Specialist in Apiculture for New York. Several prominent members of the University faculty will lecture or give interesting addresses which will add greatly to the value and pleasure of the course. A large attendance is expected. Address all inquiries to R. B. Willson, Extension Specialist in Apiculture, Roberts Hall, Ithaca, New York.

MY good friends, there is a particular reason why I wish to go over once more the turning-point in my life. For two or three years in my early manhood I was in touch with unbelievers, but they gave me no comfort. I think somebody once said that skepticism and unbelief are the most unsatisfactory things ever invented; and I think somebody else added that they are the most ungentle and uncivil

things ever invented. Robert G. Ingersoll was much in vogue about 50 years ago. If I remember correctly he (perhaps indirectly) rather encouraged the practice of suicide; and a number of suicides resulted from his teachings. Years ago a prominent Medina man suggested, as we were talking the matter over, that our churches had better "pitch the Bibles all out of the window." He did not *say* what they should do next. I had good reason to believe that the poor man objected to the Bible just as I did, because one or more of the ten commandments hit us both tremendous blows right fairly between the eyes.* I recall that, one day in the long ago, I had to take a freight train and was several hours in the caboose and had nothing to read. May the Lord be praised that there were a few even then who held fast to the Bible, and one of these, a railroader, had a Bible on his desk. I opened this Bible, and made a vain effort to find something that interested me, but it was dull and dry reading. I told the dear wife, after I got home, my experience with the old Bible. I did *not* tell it to my good old mother, for I knew how badly it would have made her feel. I was not happy, and

* I hardly need tell you, friends, that even now, altho it has been 50 years since the above occurred, somebody has been suggesting, every little while, we should pitch the Bible out of the windows or cut it short, leaving out certain things that happened to hit certain persons. A shorter Bible has been tried; but, so far as I know, it has failed. Attempts have also been made to cut out some of the special miracles—Jonah and the whale, concluding from their feeble human standpoint that things like this were too hard for even the great God of the universe. My suggestion has always been to such, that, if they are going to curtail the Bible at all, they cut it all out. But in some way it seems to continue to hang together through all the ages.

OUR HOMES

A. I. ROOT

The fool hath said in his heart, There is no God.—Psalm 14:1.

Then said Jesus unto the twelve, Will ye also go away? Then Simon Peter answered unto him, Lord, to whom shall we go? Thou hast the words of eternal life.—John 6: 67, 68.

Thy word is a lamp unto my feet, and a light unto my path.—Psalm 119:105.

What God hath joined together, let not man put asunder.—Matt. 19:6.

Backward, turn backward, O time in thy flight;
Make me a child again, just for tonight;
Mother, come back from the echoless shore—
Take me again to thy heart as of yore.

I was becoming more miserable every day. I tried breaking loose from Satan's clutches, but found myself helpless. One night after I had closed business on the street, and put up the shutters over the windows, just as I was ready to go away and lock the door, I fell down on my knees in the darkness—something I had not done before for years. My prayer was something as follows:

"O God, if there be a God, have mercy on a poor, humble specimen of thy handiwork."

Much to my surprise, the brief prayer had an immediate answer—at least I took it for an answer; and the answer, as nearly as I could make out, was something like this:

"All right, child. What do you want?"

I hesitated a moment and replied, "I want the happy innocence of childhood back again."

I do not know but the little verse at the head of this talk came to my mind, and the answer came so quickly that it startled me, and it was something as below:

"What are you willing to give or forego?"

I think I answered at once out loud to the effect that I would give up everything I had in this world. But Satan still had a hold. He was not ready to give up, and he suggested that I was making a fool of myself, for I *knew* there was *one thing* I would *not* give up. My good friends, I had become very much interested; in fact, I began to feel happy to get just a little glimpse of "the peace of God which passeth all understanding;" but as I hesitated the darkness of unbelief began to gather around me again. I think this all happened about the time, or shortly after, when U. S. Grant laid down his terms of "unconditional surrender," and I was made to understand that nothing would answer in my case, but unconditional surrender. Suddenly I caught a glimpse of my old oft-repeated prayer, "Lord, help." Perhaps a verse of an old hymn will explain it better than anything else I can now think of:

"Here I give my all to thee—
Friends and time and earthly store;
Soul and body thine to be—
Wholly thine forever more.

I had started out on the new track, and I was as keen and anxious to know more about it, and to see which way it was going to lead, as I was about any problem in bee culture. And then it occurred to me what I wanted was to get hold of the old Bible that just a few days before was a meaningless book. There was no Bible in my store—in fact, there never had been. I knew the good wife had one, and I rushed home to get it. I began to read it; and the more I read it the more deeply I became interested. Dear “Sue” (bless her memory!) finally suggested that it was after bedtime. I think I replied truthfully, that I was not quite ready. I do not know just how long I read; but when I got to the bedside the dear wife was not asleep, but she was *weeping*; and the tears she shed were tears of *joy*, and not sorrow. Let me digress a little.

I was just then full of experiments in bee culture. In order to test the raising of bees in winter time I had built a little greenhouse partly under ground. In it was a small colony (just a little nursery) with a queen bee. The queen had been laying for some days, but the eggs had not yet hatched out into larvae; and thinking they needed something more than the honey, I was feeding them some rye flour as a substitute for pollen. They were busily engaged in carrying in this pollen, and I could already see the small larvae coming. Well, friends, I had just returned from church, and had listened to one of the most wonderful sermons to me I had ever heard in my life; and as a result I could see myself, my past life, in something the way God sees it. I hurried home, got down in that little greenhouse with the bees, where they were busy at work. I bowed my head and cried over my past sins as God revealed them to me. I cried until the sawdust at my feet was wet, and my whole frame shook with convulsive sobs.* And then I tried, between the sobs, to ask the dear wife to forgive me, and *believe* that I was a changed man from that hour on. She afterward told me she had been praying, and yet the years went by, with no change, and she had somehow got it into her mind that it was not *possible* that I should ever get to be a follower of the Lord Jesus Christ.

Right here, brothers and sisters, is the point of this Home talk. When we were courting we were happy. I thought I appreciated the companion God had given me. And I thought I loved her, yet that love was *nothing at all* compared with the love when God's Holy Spirit opened my eyes. And this number of the Home papers is to the fathers and mothers, and young people who are courting. There can be no real, happy courtship and life until you two recognize your Creator *first*, and recognize, too, that the most sacred and solemn vow that

man or woman *can* take is in agreeing together to unite and build up a home. After my emancipation, as we might call it, *my own wife* whom God gave me was to me the most beautiful and lovable woman on the *face of the whole earth*.*

Several weeks after my conversion she said something like this:

“My dear husband, if you are going to continue to love *me* and love the *children* as you have been doing for several weeks past, I shall be the happiest woman living.”

And I felt also as if I should be the happiest *man* (or one of the happiest) on this whole earth, as we two worked together and united in bringing our children up in the fear of the Lord.

I hope, dear friends, this Home paper may be the means of stopping at least some of the divorces which are getting to be so common. If just one of the parties, either husband or wife, will put the Lord Jesus Christ first, and study God's holy word day by day, there certainly will not be very much chance of a divorce; and where both of the parties are God-fearing people, divorces ought to be almost if not quite *unknown* in this land of ours. Do you think all the powers of earth or any of the

*Let me suggest right here that the Bible tells us we should love our neighbor as ourself. Well, what gave me such *aniquish* was that I began to recognize, that the word “neighbor” included the dear wife; and I wish that all *markind* could feel as I did then, that the *nearest* and *dearest* neighbor any man in the whole wide world *can* have is the wife, the mother of his children. The Holy Spirit suggested to me something like this: “Old fellow, what would you do should the dear wife think exactly as *you* have been thinking!” You know well enough, friends, what has been said about the “double standard” for men and women. If a woman does go so far astray as to forget herself, the result is not only a divorce, expensive suits at law, etc., but guns and pistols, murder and suicides. Read the daily papers and see if you do not find in *any one of them* an account of some awful tragedy right along this line. If the husband is the guilty one, the wife and mother must meekly bear it; but when we turn it around the other way it is a different thing. When the Holy Spirit held a looking-glass before my eyes and said, “Thou art the man,” no wonder I should fear and tremble.

My good friend, Loretta Joy, of the Cleveland Plain Dealer, writes recently as below:

“And this hate and scorn were lashed over the quivering shoulders of the wife who now says:

“I still love him. I was taught and I have always believed that love should mean putting the happiness of the beloved before the happiness of self. I feel it my duty to give him up to this new happiness that he can find. But what of the children? Have I any right to sacrifice them?”

“Of course this ‘resigned, loving-wife spirit’ is a beautiful thing! But somehow it maddens me! It is so grossly unfair to the whole institution of marriage and the family. Its possibilities are too revolting. A wife does not act for herself and her one family alone. Her decision pounds in one nail or takes one nail away from the whole social organism. Just as women have themselves made the ‘double standard’ by excusing men for weaknesses they condemn in each other, just so would these maudlin, too-loving wives imperil the whole status of marriage and the family by yielding real rights, real values, to this tawdry, sham, tinsel ‘forty-five feeling,’ which, after all, means no more to the man than measles to his youngsters.”

*On the way home from church Mrs. Root surprised what was coming, and soon followed me down into the little greenhouse.

schemes of Satan could have brought about a divorce in our home after what I have told you in the above? See what Paul says below:

For I am persuaded that neither death, nor life, nor angels, nor principalities, nor powers, nor things present nor things to come, nor height nor depth, nor any other creature, shall be able to separate us from the love of God which is in Christ Jesus our Lord.—Romans 8:38, 39.

Of course Paul in the above refers to the close connection between the penitent sinner and his Savior; but where the Lord Jesus Christ comes first in any home it seems to me the matter of divorce or separation should be as utterly impossible in just the way Paul has expressed it.

“YE MUST BE BORN AGAIN.”

A vivid illustration of “putting off the old life and putting on the new,” is illustrated in the following from one of our good friends:

When I was a boy, our next neighbor was a rough, illiterate man, of awkward, uncouth appearance, but a kindly, honest man, a good neighbor, but not a Christian. He finally attended some meetings held by the Volunteers of America, and was converted. A few weeks after he got up to give his first testimony. He said in effect: “Neighbors and friends, I’ve been coming to these meetings and I’ve found my Savior. I know I’m saved, and I’ll tell you how I know it. The other night I was milking my cow, and just as I had a nice full pail of milk she up and kicked it over. Three weeks ago I’d have sworn a blue streak, but I just stood and looked at the milk and looked at the cow and I said ‘Praise the Lord.’”

You can imagine the impression the awkward, unkempt, bewhiskered, long-haired man, clad in overalls, made as he gave this talk. To their shame be it said that most of the audience saw only the ludicrous side of it; but I have always felt that he had applied the only real test of genuine indwelling of the Spirit, in that he could take it with him in his daily tasks, no matter how humble, and live every moment by its help. The most glorious moment in a man’s life here below is when the Spirit comes into his heart and takes the curses out and puts praise there instead, and this little incident has always stood in my mind as one of the most perfect evidences of real conversion that I ever witnessed. I am glad to say that this man continued in the better life to his death many years after, in spite of many hardships and discouragements.

W. H. Haughwout.

Peebles Building, Oswego, N. Y.

Please note that, in place of the former curses and profanity, he simply said, “Praise the Lord.” No wonder people laughed; but I think they did not realize what it meant. The poor converted sinner was praising the Lord because he could feel from the bottom of his heart that the old wicked life was gone *clear out of sight*, forever. I have been through experiences similar to the above; but I fear that I have not very often had the courage or grace to say, “Praise the Lord,” right square in the face of disaster.

In closing this Home paper, the last of the year, I want to give you a recent experience. I had been spending quite a little time in prayer before I retired. In the middle of the night I awoke feeling very happy. I dreamed—I am not quite sure *now*, it was *all* a dream—that I heard angel voices in song; and after I was fully awake I man-

aged to recall some of the words. Below is what I heard (and it set me to rejoicing) as nearly as I can make it:

I will believe, I do believe.

That thou didst die that I might live,

And that thou bidst me come to thee,

My Savior and my God.

Of course this is somewhat similar to some of the hymns we have; but I have not been able to find anything just like it, nor anything that seems to fit as well to the wonderful melody that came into my *heart* and *soul*, in the middle of the night.

Modern Surgery: What it Has Accomplished.

My father was one of a family of nine children. My mother was one of a family of eleven; but her father had a second wife. I was one of a family of seven, and Mrs. Root and I have given to the world five children. Each one of these five, with one exception, has two children. The one exception is the daughter Constance, who has three—two boys and a girl. From the above you will notice that the fashion of having large families seems to be, I was going to say, going “downhill.” But perhaps I had better not say that. There are two extremes in almost everything; and I presume it would be hardly fair or kind to ask the average woman to bear and bring up the number of children that used to be the fashion in olden times. I wish to add, however, that the world agrees, or must agree, that a large number of the great men and women who have blest the world came from a family of at least moderate if not good size. Look about you and see if this is not true. There is a reason for this. Where there is a fair-sized family each one has to get up and dust a little more by himself than where there are only two or even one. Especially is this true where there is only one child. That child has everything done for him, and often has the best of everything so that he is not obliged to “hustle” for himself like each one of a good-sized family. With this in view each one of our five has at least two children. I do not know how much Mrs. Root, the mother, had to do with it in the way of advice in the above.

Some of you may begin to ask what all this has to do with surgery as in the title at the head of this talk. Well, not very much as yet; but listen. The general manager of our institution had only one little girl. You may remember I suggested naming her Kathryn, after the good sister of the Wright brothers, with whom I was in touch, some years ago. Well, the good wife had much trouble in giving birth to the little one—so much so that the doctors declared it would not be safe for her to think of having another child. Perhaps I might say her suffering was so great that, after the little one was born, she began sinking, and finally stopped breathing; and I believe the attending physician gave her up as dead.

The father, however, remembering the many cases in which he had seen, or known of wonderful answers to prayer in such crises, began praying. In fact, he told me that he never prayed for anything in this world as he did that the dear wife and mother might come to life in spite of what the doctors said. And she did finally commence breathing, and in due time became so robust and strong that they began to consider once more the matter of another child; and I think the godly father and mother made it a subject of prayer that, if it was the Lord's will, they might have a *boy* in the family as well as a girl. And here is where the matter of surgery comes in. They said if the same dangerous symptoms should recur as in years before, when she approached childbirth there was a way* in which the little one could be brought into the world, aside from the old orthodox plan adopted since humanity began, and, I might say, since the time of Adam and Eve. Your family physician can explain to you all about it in detail. The unpleasant and dangerous symptoms did appear, and a skillful surgeon was employed. The little "Rootlet" was a year old yesterday, Oct. 20; and it is my pleasure to give you a picture of him.



David Root.. who came into the world by the help of modern surgery instead of nature's way.

While we were in Florida last winter Huber wrote something in regard to the new baby that I did not preserve; but, so far as I can recall, it was something like this:

"If we are ever given glimpses of what heaven is like while we are here on this

earth, my experience would indicate that these glimpses come in the way of the angelic smiles which the little one gives us when it first begins to recognize its father and mother."

David Root was born Oct. 20, 1921. His grandmother Root's death was on Nov. 28, 1921. On the very day she died—in fact, not many minutes before her death—she went down to our colored man Wesley who was working in the garden and showed him two pictures of the baby. These pictures had just been received. The last letter that she ever wrote to the dear children was dated Nov. 21; and after she had finished her letter she added a postscript as below:

P. S.—Kiss little darling "Dave" for his grandmother Root. Love to all.

It gives me great pleasure to add that the mother suffered little or no pain at all, and has been in excellent health ever since; and furthermore, the bright and robust baby has never been *sick a day in his life*. He and his grandfather are on most excellent terms; and I suppose it is no more than a matter of course that I should regard him as the *brightest and prettiest* and most *perfect* baby I ever saw. When he gives me one of his magnificent smiles and shows his rows of beautiful, new pearly teeth, I can almost say what Huber said in the letter he wrote us.

The Starving Victims of the Atrocious Turks.

Just as soon as your eyes strike this, and if you can, get a copy of the Literary Digest for Oct. 21, 1922. Half a million of poor honest and innocent people, mostly women and children, are starving and dying with their homes burned to the ground by the awful Turks. The Literary Digest has advanced \$176,000 for a boatload of provisions to stay off starvation for a brief period. The Y. M. C. A., the Y. W. C. A., as well as the Red Cross, are doing their utmost to help, and the President of the United States is backing it all. Every little helps. Do what you can for these suffering people, and God will reward you. Later: I now notice the Red Cross has two millions to feed the starving, and if more is needed it will be forthcoming. Surely a better world is in sight.

A Kind Word from the Farm Journal.

With the exception of two young ladies who preceded me in The Farm Journal, I am now the oldest associate of my Uncle Wilmer Atkinson in the business. One of the first things I learned was the interest, co-operation and good will of A. I. Root towards The Farm Journal, and to return this has been a guiding principle of this office all the time. We never lose a chance to speak a good word for Gleanings and the good people who are back of it.

I remember years 20 ago W. Atlee Burpee, a seedsman of great ability in many lines, told me there were only two papers of the many hundreds which he received at his office every week which he took home with him—they were Gleanings in Bee Culture and The Farm Journal; and the reason he took them home, he says, was they had "souls" to them.

I am much obliged for your letter for making electricity out of wind, and some of our editors will undoubtedly be able to use this.

I hope you are enjoying the good health of four score years, a fitting crown of an active useful life.

With best wishes,
Chas. F. Jenkins,
of The Farm Journal.
Philadelphia, Pa., Aug. 15, 1922.

*Caesarean section.

Classified Advertisements

Notices will be inserted in these classified columns for 50c per line. Advertisements intended for this department cannot be less than two lines, and you must say you want your advertisement in the classified column, or we will not be responsible for errors. For special conditions on bee and queen advertising, please write us. Copy should be received by 15th of preceding month to insure insertion.

REGULAR ADVERTISEMENTS DISCONTINUED IN GOOD STANDING.

(Temporary advertisers and advertisers of small lots, when discontinued, are not here listed. It is only regular advertisements of regular lines who are here listed when their advertisements are discontinued when they are in good standing.)

J. F. Moore, Bert Smith, Edward Wilson, Dr. E. Kohn & Son, Ed. Hassinger, C. S. Engle, C. C. Hoover & Sons, Woodward Apiaries, C. J. Baldridge, H. E. Crowther, A. I. Root Co. of New York, J. F. Coyle, R. V. Cox, F. H. Nelson, C. J. Appeldoorn, Emile J. Beridon, Jr., J. L. Leath, R. S. Knight, The Progress Nurseries, H. L. Christopher, Loveitt Honey Co., Rhode Island Red Journal.

HONEY AND WAX FOR SALE.

LIGHT amber honey in 60-lb. cans. Van Wyn-garden Bros., Hebron, Ind.

BUCKWHEAT honey of finest flavor, in 5 and 10 pound pails. Chas. Reynders, Ulster, Pa.

FOR SALE—Basswood mixed, also buckwheat in new 60-lb. cans. Bert Smith, Romulus, N. Y.

FOR SALE—Fine quality raspberry-milkweed honey in new 60-lb. cans. P. W. Sowinski, Bellaire, Mich.

FOR SALE—White sweet clover in cases, two 60-lb. cans, 10c per lb., f. o. b. Joe C. Weaver, Cochrane, Ala.

FOR SALE—Clover, amber and basswood honey in new 60-lb. cans, 5 and 10 lb. pails. H. B. Gable, Romulus, N. Y.

FOR SALE—Clover extracted honey in new 60-lb. cans, 120 lbs. net, \$15.00. A. J. Norberg, Spring Valley, Ill.

FINE quality, well-ripened white clover honey, 12½c per lb. New 60-lb. cans, two in case. J. G. Burtis, Marietta, N. Y.

FOR SALE—Fancy clover comb, \$5.25 per case; No. 1, \$4.75; 24-section cases, 8 cases to carrier. Ross B. Scott, La Grange, Ind.

FOR SALE—Send for sample of new clover-basswood honey in new 60-lb. cans. J. N. Harris, 502 W. Center, St. Louis, Mich.

EXTRACTED white clover and buckwheat honey, 1922 crop. New 60-lb. cans and 5 and 10 lb. pails. Chester N. Ballard, Valois, N. Y.

FOR SALE—12,000 lbs. of choice white clover honey, well ripened, put up in new 5 and 10 lb. pails. Sample 25c. W. B. Wallin, Brooksville, Ky.

FOR SALE—Choice new clover extracted honey put up in new 60-lb. cans. Write for prices, stating quantity desired. W. M. Peacock, Mapleton, Iowa.

HONEY FOR SALE—In 60-lb. tins, water-white orange, 12c; white sage, 12c; extra L. A. sage, 10½c; buckwheat, 10c, etc. Hoffman & Hanck, Woodhaven, N. Y.

FOR SALE—Choice white clover honey in new 60-lb. cans, two to a case, at 12c per lb. Sample for 20c to apply on purchase. Kenneth Gallant, Cato, N. Y.

FOR SALE—Fine quality of buckwheat honey, put up in 5-lb. pails at 75c each. Write for prices in lots of 20 pails. Chas. B. Hutton, Andover, R. D. No. 3, Ohio.

FOR SALE—White clover honey in 60-lb. cans and 5-lb. pails, this year's crop, none better. Write for prices. Sample, 10c. F. W. Summerfield, Waterville, Ohio.

FOR SALE—North Michigan clover honey in new 60-lb. cans, two to a case at 11c per lb. in 5-case lots. Prices on smaller lots on application, also sample. J. H. Corwin, Merritt, Mich.

FOR SALE—Very best clover basswood honey. Produced in new combs. Packed in new containers. 60-lb. cans and 5-lb. pails. Sample, 20c. Write for prices. A. C. Ames, Weston, Ohio.

RASPBERRY HONEY—In 60-lb. cans, 2 in a case for \$14.40; one in a case, \$7.50. Sample by mail, 20c, which may be applied on order for honey. Elmer Hutchinson & Son, Lake City, Mich.

FOR SALE—Extracted white clover honey, 12 5-lb. pails, \$9.00; case of two 60-lb. cans, \$14.40; buckwheat, two 60's, \$10.80. Seward Van Auker, Duaneburg, N. Y.

FOR SALE—Clover extracted; one 60-lb. can, \$7.50; two 60-lb. cans, \$14.40; buckwheat, one 60-lb. can, \$5.40; two 60-lb. cans, \$10.20. J. J. Lewis, Lyons, N. Y.

FOR SALE—Spanish needle heartsease honey, fine body and flavor, 5-lb. pails, 12 to a case. Write for price, state quantity wanted. F. W. Luebeck, R. D. No. 2, Knox, Ind.

HONEY FOR SALE—In 60-lb. cans, two cans in each case. Light amber gathered from June 1 to July 15, 11c per pound, also buckwheat, 9c per pound. Robert Conn, Roaring Branch, Pa.

EXTRA quality white honey, \$7.20 per 60-lb. can; 14c per lb. in 10-lb. cans on 6 or more cans. 10 lbs. prepaid, \$2.00 in third zone, 20c extra each additional zone. Absolute satisfaction. F. W. Lesser, Fayetteville, N. Y.

FOR SALE—Finest quality white clover extracted honey, well ripened and of fine flavor, put up in 60-lb., 12-lb. and 2½-lb. cans, and 10 and 5 lb. pails. R. C. Ortleib, 29 Van Buren St., Dolgeville, N. Y.

OUR 1922 crop of white clover extracted honey is now ready for the market. New cans and cases. Say how much you can use, and we will be pleased to quote you our very lowest prices. E. D. Townsend & Sons, Northstar, Mich.

FOR SALE—Choice clover extracted honey in new 60-lb. cans and cases. Write for prices on carload or case lots; comb honey in Danz and beeway sections. Packed in six or eight case carriers. Quality unexcelled. J. D. Beals, Oto, Iowa.

HONEY—Best quality clover or buckwheat. 12 5-lb. pails, \$9.00 at our station; 2 60-lb. cans, \$15.00. 5 lbs. delivered within third zone. \$1.20; 10 lbs., \$2.00, net weight. **GUARANTEED ALWAYS RIGHT.** Write for prices on larger quantities. Earl Rulison, R. D. No. 1, Amsterdam, N. Y.

FOR SALE—No. 1 white comb honey, \$6 per case; No. 2 white comb, \$5 per case of 24 sections; dark comb, dollar per case less; 24-case lots, 50c per case less. Amber and dark extracted, 10c per pound, two 60-lb. cans to case. Amber baking honey in barrels, 8c per pound. Discount on extracted in quantities. H. G. Quirin, Bellevue, Ohio.

CLOVER honey, fine quality, 6-lb. can't-leak can, \$1.35; four 5-lb. pails, crated, \$4.00, delivered into third zone. 60-lb. can, \$7.20, two 60-lb. cans, \$14.00 f. o. b. Hugh G. Gregg, Elbridge, N. Y.

CLA-FO-NY Quality Honey (liquid or crystal) clover two 60's (115 lbs. net), \$15.00; 15 5's (75 lbs. net), \$12.00; buckwheat, 2 60's, \$11.50; 15 5's, \$9.75. 5 pounds either delivery third zone, \$1.20. Satisfaction guaranteed. Clarence Foote, Delanson, N. Y.

FOR SALE—We have fine lots of white clover, sweet clover, basswood, buckwheat and amber honey. Tell us what you want. Prices and samples on request. Good second-hand cans, 60c per case of two cans. A. I. Root Co., 224 W. Huron St., Chicago, Ill.

CHOICE extra fancy white clover honey in new 60-lb. cans, 120 lbs. net, \$14.00. Sample, 20c. Write for prices on larger quantities. 100 cases extra fancy Hubam clover honey, same price. Also fancy comb honey, \$5.00 per case 24 sections, 8 cases to carrier. Edw. A. Winkler, R. D. No. 1, Joliet, Ill.

OUR 1922 crop extracted honey is a very fancy grade, water white clover, which was left on the hives until thoroughly cured by the bees before extracting, making it very heavy bodied. This thick, rich honey is all packed in new 60-lb. cans, two to the case. Of course, we have to ask a little more for honey of this quality than ordinary honey. When in need of a good article send a dime for a sample, and address your inquiry to D. R. Townsend, Northstar, Mich.

FOR SALE—We can supply honey to beekeepers or other roadside sellers who may need to buy beyond their own supply, packed as follows: 2½-lb. friction top tin cans, 1 dozen in case; 5-lb. friction-top tin cans, ½ doz. in case; 10-lb. friction-top tin cans, ¼ doz. in case; 60-lb. square cans, 1 to case; 60-lb. square cans, 2 to case. We have the following kinds of honey: Standard white, alfalfa, sweet clover, California sage, California orange, light amber, amber. Write for prices. The A. I. Root Co., Medina, Ohio.

HONEY AND WAX WANTED.

WANTED—Comb and extracted honey. Fancy yellow wax. C. J. Morrison, 750 Cottage Grove Ave., South Bend, Ind.

WANTED—Honey in ton lots, comb and extracted of all kinds. Send sample. State price. Joe Minarits, 8931 Keller St., Detroit, Mich.

WANTED—Comb and extracted honey, carload and less. All kinds of honey and beeswax for sale. Walter C. Morris, 105 Hudson St., New York.

BEESWAX wanted. Old combs (dry) and cappings for rendering. Also wax accepted in trade. Top market prices offered. A. I. Root Co. of Iowa. Council Bluffs, Iowa.

OLD COMBS, cappings or slumgum wanted for rendering by steam press process. We pay cash for wax rendered, trade for supplies, or work it into foundation. W. T. Falconer Mfg. Co., Falconer, N. Y.

OLD COMBS WANTED—Our steam wax-presses will get every ounce of beeswax out of old combs, cappings or slumgum. Send for our terms and our 1923 catalog. We will buy your share of the wax for cash or will work it into foundation for you. Dadant & Sons, Hamilton, Ill.

FOR SALE.

FOR SALE—Good second-hand 60-lb. cans, two cans to case, boxed, at 60c per case, f. o. b. Cincinnati. Terms cash. C. H. W. Weber & Co., Cincinnati, Ohio.

HONEY LABELS—New design. Catalog free. Eastern Label Co., Clintonville, Conn.

FOR SALE—"SUPERIOR" FOUNDATION, "quality unexcelled." Let us prove it. Order now. Superior Honey Co., Ogden, Utah.

PORTER BEE-ESCAPES save honey, time and money. For sale by all dealers in bee supplies. R. & E. C. Porter, Lewiston, Ill.

ADAPTABLE BEEHIVES are sound in principle and are practical. For free information address Geo. P. Wood, Peekskill, N. Y.

THREE-HORSE boiler, \$35.00; four-horse engine, \$40.00; worth \$150.00. \$75.00 takes them. J. W. Utter, Amity, Orange Co., N. Y.

FOR SALE—Hubam clover seed grown in rows and kept perfectly clean, therefore absolutely pure. 50c per lb. f. o. b. Holgate, Ohio. Noah Bordner, Holgate, Ohio.

ROBINSON'S comb foundation will please the bees, and the price will please the beekeeper. Wax worked at lowest rates. E. S. Robinson, Mayville, Chau. Co., N. Y.

FOR SALE—A limited number of new bottom-boards, covers and hive-bodies, eight or ten hives, nailed or in flat. A bargain, in cypress and fir. Ray C. Wilcox, Odessa, N. Y.

FOR SALE—A Given foundation press, size 9 x 15 inches, in as good condition as if new. Also 50 or 60 swarms of bees and a lot of surplus hives and combs. Lyman Reed, 25 Vosberg St., Iliion, N. Y.

OPPORTUNITY, nearly new factory building, fully equipped for manufacturing beekeepers' supplies. Building is 40 x 70 feet, besides engine room, two story, electric lights, steam power and heat, on main line D. L. & W. and Rochester Division of Erie. Owners will sell at bargain and on right terms, as have no use for it, being engaged in other business. Communicate with Gledhill & Putnam, Inc., Avoca, N. Y.

FORCED TO SELL.—Conflicting claims on my time have forced me to sacrifice my packing business and apiaries for \$1750. This is a snap for the apiarist wishing to live in the fairest part of California, and engage in the best paying end of the bee business. I was unable to supply the demand this year and have orders already for 1923. Inquiries and inspections welcomed. Write for details regarding this opportunity. References on request. G. T. Johnson, 165 Raymond Ave., San Jose, Calif.

WANTS AND EXCHANGE.

WANTED—Foundation mill. Rolls must be in perfect condition. The Stover Apiaries, Mayhew, Miss.

WANTED—Bees on share the coming season, anywhere in New York State. J. K. Dixon, Odesa, N. Y.

WILL exchange bees and queens for an automatic twelve-gauge shotgun. Oscar Mayeaux, Hamburg, La.

WANTED—Comb-back chairs, also old rockers and chests with drawers. John Rick, 434 Oley St., Reading, Pa.

WANTED—Copies of Gleanings for Feb. 1 and March 1, 1914, August 1 and October 1, 1915. W. W. Barnhill, Polk, Ohio.

WILL exchange 1922 spring-hatched Grist Grady Stags for Root or Lewis ten-frame bodies, some manufacture of Hoffman frames, medium brood foundation or hand extractor in good condition. State fully what you have. Shepard Apiaries, Piper, Ala.

WANTED—Old boxes, KD. C. Callaway, Norwood, Va.

WANT Barnes saw outfit equipped for beekeepers' use. State condition and lowest cash price. Amos Miller, Dundee, O.

BEESWAX WANTED—For manufacture into SUPERIOR FOUNDATION. (Weed Process.) Superior Honey Co., Ogden, Utah.

WANTED—Old combs and cappings for rendering on shares. Our steam equipment secures all the wax. Superior Honey Co., Ogden, Utah.

WANTED—Shipments of old combs and cappings for rendering. We pay the highest cash and trade price, charging but 5c a pound for wax rendered. The Fred W. Muth Co., Pearl and Walnut Sts., Cincinnati, Ohio.

WANTED—200 colonies of bees. Almond growers at Arbuckle, Calif. wish tenders for placing about 200 colonies of bees in their orchards during the blossoming season of 1923—about three weeks' time. V. S. Persons, 1216 Hearst Bldg., San Francisco, Calif.

WANTED—Beeswax. We are paying 1c and 2c extra for choice yellow beeswax and in exchange for supplies we can offer a still better price. Be sure your shipment bears your name and address so we can identify it immediately upon arrival, and make prompt remittance. The A. I. Root Co., Medina, Ohio.

BEEES AND QUEENS.

HARDY Italian queens, \$1.00 each. W. G. Lauver, Middletown, Pa.

FOR SALE—18 stands of good Italian bees. Mrs. M. E. Address, Larned, Kan.

FOR SALE—Italian queens, nuclei and packages. B. F. Kindig, E. Lansing, Mich.

GOLDEN Italian queens, untested, \$1.00; six, \$5.00. E. A. Simmons, Greenville, Ala.

PACKAGES, NUCLEI and QUEENS for 1923. Get my prices. J. J. Scott, Crowville, La.

PACKAGE BEES—1923 prices and circular free. Pedigree strains. Dr. White Bee Company, Sandia, Texas.

WE are booking orders now for spring deliveries. Write us for prices. Graydon Bros., R. D. No. 4, Greenville, Ala.

LATE QUEENS—For late queens send me the order. Pure three-band Italians. No disease. Low prices. D. W. Howell, Shellman, Ga.

"SHE-SUITS-ME" queens, line-bred Italians, \$1.50 each; 10 to 24, \$1.30 each. See back cover of January number. Allen Latham, Norwichtown, Conn.

PACKAGE BEES and QUEENS for 1923. Nothing but pure Italians. No disease. Write me for prices for next spring shipment. Jasper Knight, Hayneville, Ala.

NOW BOOKING PACKAGE BEES. Write for my circular of bees and prices. See other advertisements elsewhere, this issue. C. M. Elfer, St. Rose, Louisiana.

NUCLEI—We are now booking orders for May 1 delivery. Leather-colored, good Italian bees and queens, 1-fr. nucleus with bees, brood, untested queen, \$3.50; 2-fr. nucleus, \$5.00; 3-fr. nucleus, \$6.00. One colony bees with select untested queen, \$11.00. We guarantee safe arrival, no disease. We think our queens equal to the best in prolificness, the bees hustlers in gathering honey. Weber Brothers Honey Co., Rialto, Calif.

FOR SALE—Bright Italian queen, 1, \$1.00; 12, \$10.00; 100, \$75.00. Safe arrival guaranteed. T. J. Talley, Greenville, R. D. No. 3, Ala.

GOLDEN QUEENS for 1923, the bright kind. Satisfaction guaranteed. Will begin shipping April 1. Price, \$1.00 each or \$10.00 per dozen. E. F. Day, Honoraville, Ala.

POOLE'S three-banded Italian queens are guaranteed to arrive safely and give satisfaction. Untested, 80c each; 25 or more, 75c; tested, \$2.00. Rufus Poole, Greenville, Ala.

WE are booking orders now for spring delivery for the famous "Colorado Queens." Send your order early so as to be sure to get your queens. C. I. Goodrich, Wheatridge, Colo.

I AM booking orders now for next spring delivery, 3-frame nuclei and queens at the same price as this year. Caucasian or Italian race. Peter Schaffhouser, Havelock, N. C.

VERY LOW PRICES on nuclei and package bees for early spring delivery. Black bees with Italian queens, also fine stock Italians. No disease. A. J. Heard, R. D. No. 1, Bonaire, Ga.

BEEES BY THE POUND — Also QUEENS. Booking orders now. FREE circulars, giving details. See larger ad elsewhere. Nueces County Apiaries, Calallen, Texas, E. B. Ault, Prop.

FOR SALE—Leather-colored Italian queens, tested, until June 1, \$2.50; after, \$2.00. Untested, \$1.25; 12, \$13.00. ROOT'S GOODS, ROOT'S PRICES. A. W. Yates, 15 Chapman St., Hartford, Conn.

IF GOOD bright Italian queens are wanted by return mail, send your order to M. Bates, Greenville, Ala. Price, \$1.00 each; \$10.00 per dozen; \$75 per 100. Pure mating, safe arrival and satisfaction guaranteed.

PINARD'S quality of Root's and Prof. Coleman's strain of bees and queens. Booking orders for spring delivery. Promptness and satisfaction my motto. Prices right, circular free. A. J. Pinard, Morgan Hill, Calif.

PACKAGE BEES for 1923—Italians, \$2.00 per lb. Tested queens, \$1.50 each. Frames of brood, \$1.50 each. Mixed stock, 10% discount. Liberal discount for large orders or late shipments. No disease. T. W. Livingston, Norman Park, Ga.

LET me save you money on your 1923 package bees, nuclei and queens. Book early and not be disappointed. Queens balance of season, 85c; 6 or more, 65c, after Oct. 20, \$1.00 straight. Everything guaranteed. J. L. Morgan, Tupelo Honey Co., Columbia, Ala.

FOR SALE—My entire bee business consisting of 325 colonies of bees in two-story hives and lots of honey with complete extracting equipment. A \$4000 deal; \$2500 cash necessary. Time on balance. For full details and description, address H. R. Fisher, 303 S. 8th St., Montrose, Colo.

PACKAGE BEES—2000 big, strong, healthy colonies will be ready to supply PACKAGE BEES in the spring. Italian or Carniolan QUEENS. Let me quote prices and book your order early. A small deposit reserves shipping date. Circular free. J. E. Wing, 155 Schiele Ave., San Jose, Calif.

FOR SALE, 1923, PACKAGE BEES—All bees are shipped on standard Root frame, emerging bees with honey, April 25 to May 30. 2-lb. package three-banded Italians, \$5.00; 3-lb. package, \$5.75; 4-lb. package, \$6.50. June 1 to 30th: 2-frame nuclei with untested queen, \$4.75; 3-frame, \$5.00; 4-frame, \$5.75. An untested queen with each package or nucleus. Safe delivery guaranteed, free from any contagious bee disease. Certificate will accompany each shipment. No shipment of bees by parcel post. Send 15 per cent to book order. A. J. Lemoine, Moreauville, Box No. 55, La.

ITALIAN BEES AND QUEENS—One-pound to five-pound packages, one-frame nuclei to full colonies, shipped when you want them. You will be pleased with our stock, our service and our prices. Certificate of inspection certifying freedom from disease with each shipment. Write for our prices before you order. White Clover Farm and Apiary, Hamburg, La.

PLACE your early orders now for queens and package bees. Golden Italian and Caucasian queens, April 1 to May 15, 1923. Untested, 1, \$1.50; 12, \$15.00; 25, \$1.00 each; 2-lb. package bees, \$5.00; 3-lb. package, \$6.50; 20% off above prices after May 15. Golden Italian breeders, \$15.00 to \$20.00. Safe arrival guaranteed. Terms, 25% with order. Sarasota Bee Co., Sarasota, Fla.

FOR SALE—Pure Italian bees and queens, 3-banded, 2-pound packages with selected queens; 1-5, \$5.00; 5-25, \$4.75; 25 or more, -4.50, delivered. Queens, 1-50, \$1.00 each. 25 per cent cash books order, balance a few days before shipping season begins. Shipping season opens April 15. No disease, safe arrival and satisfaction. We ship only the best. W. C. Smith & Co., Calhoun, Ala.

PACKAGE BEES FOR 1923—Three-band Italians, bred for business. A 2-lb. package of the Yancey hustlers with a select untested queen for \$5.00; 25 or more, \$4.75 each. Attractive prices on large lots. One-fifth cash books your order. Order early and make sure of shipping dates. We do not accept more orders than we can fill promptly. Caney Valley Apiaries, Bay City, Texas, Yancey Bros., owners.

HIGHEST PRICED QUEENS ON RECORD.—Doesn't mean that we sell queens higher than any one else but that we breed from this kind. We have two breeding queens that have made wonderful records and we are now booking orders for package bees and queens from them to be delivered next spring. Write for prices and the story of these queens. J. M. Cutts & Son, R. D. No. 1, Montgomery, Ala.

GOLDEN ITALIAN QUEENS AND BEES ready April 5 to 15, 1923. Untested queens, 1, \$1.00; 6, \$5.00; 12, \$10.00; 100, \$75.00. 1-fr. nuclei with queen, \$3.00; 2-fr. nuclei with queen, \$5.00; 1-lb. package with queen, \$3.00; 2-lb. package with queen, \$5.00. It costs no more to get the best. No disease. Health certificate with each shipment. Safe arrival and satisfaction guaranteed. 20% will book your order for spring delivery. J. F. Rogers, R. D. No. 3, Greenville, Ala.

PACKAGE BEES for spring delivery. Vigorous leather-colored Italian queens, three-banded stock; also bees in packages. Every queen I sell is young, also laying, and 90 per cent of them are purely mated. These queens are from select breeding queens, and can not be surpassed, being a credit to the beekeeping world. My bees are absolutely healthy, and are thoroughbreds. Unsolicited testimonials vouch for satisfaction given. Three-frame nuclei, with queens, a specialty; also ship combless packages. Shipments begin April 15, depending upon weather conditions. Safe arrival guaranteed, or replacement or money refunded. Write for my circular showing reduced prices, quality of stock, testimonials. Order early. Now booking orders. C. M. Elfer, St. Rose, Louisiana.

E. D. TOWNSEND, Northstar, Michigan, of the firm of E. D. Townsend & Sons, has his winter home at Marksville, La., among the large shippers of package bees. Some of these beekeepers are mighty good beekeepers, but poor salesmen. A year ago I sold several hundred packages of bees for the above producers, and they have asked me to sell for them again during next season and I have decided to do so. No small orders will be accepted, and none but three and four pound packages, with comb of sealed brood and honey, will be handled. If you can use from 25 to 500 packages, the kind that brings in the full crop of honey the first season, you will make a mistake if you do not get my very low jobbing prices before buying. Address me at Northstar, Michigan, until December 15, later at Marksville, La.

MISCELLANEOUS.

THE BEE WORLD—The leading bee journal in Britain, and the only international bee review in existence. It is read, re-read and treasured. Will it not appeal to you? Specimen copy free from the publishers. The Apis Club, Benson, Oxon, England. Send us a post card today. It is well worth your little trouble.

MEDICINAL roots and herbs are very profitable to grow. We especially recommend growing Golden Seal which with good care will yield as high as \$10,000 per acre for each crop. It takes several years to mature but will average \$1000 a year. Special Crops, a monthly paper, tells how. Sample copy, 10c. \$1.00 per year. Address Special Crops Pub. Co., Box "G," Skaneateles, N. Y.

ANNOUNCEMENT—Mr. W. J. Redfearn has entered the business of Indianola Apiary. Mr. Redfearn has had several years' experience with Mr. J. J. Wilder, Waycross, Ga., and comes well recommended by him. My old and new customers may expect the same business methods in promptness and square dealing. J. W. Sherman, Valdosta, Ga.

HELP WANTED.

WANTED—An experienced modern queen-breeder, capable of all kinds of work connected with apiaries operated for the purpose of nuclei shipping and queen-rearing. State wages and give references. A. R. Irish, Savannah, Box 134, Ga.

WANTED—On a large farm, a man of energy and experience to take full care of bees, and during season of the year when bees do not require attention to do other work. Home apiary is on a state road and bee man must be a person of good address and a good salesman, neatness and accuracy essential. Records of colonies kept. Salary \$20.00 per week. Good house equipped with running water, furnace and electric light fixtures, rent free. Do not apply unless you would be interested in developing the business and would come intending to stay. Address Mount Hope Farm, Williamstown, Mass.

SITUATION WANTED.

WANTED—For next season, job as queen-breeder, either on shares or salary. Am an expert. Reference given. J. C. Duett, East Tallahassee, Ala.

TRADE NOTES.

Inasmuch as we expect to discontinue listing the following articles in our general catalog we are offering them at a big reduction in order to close out present stock.

For Shipment from Medina, Ohio.

14	C472802—Root capping-melters, price each	\$12.00
15	C472803—Dadant uncapping-cans, price each	13.00
14	C472808—Boardman solar wax-extractors, price each	19.00
50	C271801—Demuth winter cases complete, nailed, slightly shopworn. Price each .....	.50
60	C261602—Metal top telescope cap covers with inner cover, 8-frame, K. D., price each	1.50
65	C262606—Metal top telescope cap covers with inner cover, 10-frame, K. D., price each	1.60
3	C261601—Metal top telescope cap covers with inner cover, 8-frame, nailed and painted, price each	1.90
2	C262601—Metal top telescope cap covers with inner cover, 10-frame, nailed and painted, price each	2.00
4	C271701—Dovetailed winter cases, 8-frame with wood cover complete, nailed and painted, price each	2.75

- 1 C271702—Crate of 5 dovetailed winter cases, 8-frame, with wood cover, complete, K. D., price per crate..... 6.25
- 250 one-pound bee-shipping cages with feeder pan, K. D., price each..... .30
- 240 two-pound bee-shipping cages with feeder pan, K. D., price each..... .40
- 172 three-pound bee-shipping cages with feeder pan, K. D., price each..... .50
- The above cages are well made and are very satisfactory for shipping bees without combs by express.
- 195 C249001—Twin-mating nuclei, in the flat, put up in crates of five. Price per crate..... 4.75
- 2 C492001—One and one-half horse-power Busy Bee gasoline engines. Price each..... 35.00
- 4 one-half inch honey pumps. Price each, complete with fittings, \$7.00; complete without fittings..... 5.00
- 6 Dadant electric wire imbedders. Price, each..... .75
- 80 Bee Models—The Anatomy of the Bee, price, each..... .25
- 100 lbs. C490561—Crate staples, $1\frac{1}{2} \times \frac{3}{4}$ inch. price per pound..... .12

In addition to the above bargains we have in stock 5000 second-grade Hoffman frames standard size $9\frac{1}{2} \times 17\frac{1}{2}$, packed in cartons of 100 only, which we offer at the special price of \$5.00 per hundred as long as present stock lasts. Sample sent on request.

Above prices are strictly net f. o. b. Medina, Ohio.

For Shipment from New York City, N. Y.

- 5 C271702—Dovetailed winter cases, 8-frame with metal cover, in the flat, packed in crates of one. Price each... 2.00
- 20 C271703—Dovetailed winter cases, 8-frame with metal cover, in the flat, packed in crates of five. Price per crate..... 9.50
- 7 C272702—Dovetailed winter cases, 10-frame with metal cover, in the flat, packed in crates of one. Price, each... 2.10

- 8 C271701—Dovetailed winter cases, 8-frame with metal cover, nailed and painted. Price, each..... 2.75
- 7 C272701—Dovetailed winter cases, 10-frame with metal cover, nailed and painted. Price each..... 2.90
- 6 C271702—Dovetailed winter cases, 8-frame with wood cover, in the flat, packed in crates of one. Price each... 1.40
- 25 C271703—Dovetailed winter cases, 8-frame with wood cover in the flat, packed in crates of five. Price per crate... 6.25
- 6 C271701—Dovetailed winter cases, 8-frame with wood cover, nailed and painted. Price each..... 2.25
- 5 C272702—Dovetailed winter cases, 10-frame with wood cover, in the flat, packed in crates of one. Price, each... 1.55
- 45 C272703—Dovetailed winter cases, 10-frame with wood cover, in the flat, packed in crates of five. Price per crate..... 7.00
- 2 C272701—Dovetailed winter cases, 10-frame with wood cover, nailed and painted. Price each..... 2.50

The above prices are subject to stocks on hand and are strictly net F. O. B. New York. Send all orders to The A. I. Root Company, Medina, Ohio.

Back in Our Florida Home.

May God be praised for the triumph of prohibition in Ohio, once more, in spite of all that the "prince of darkness" could bring to bear. And may God be praised also that Judge Florence Allen has been recognized and sent away up to the Supreme Court of Ohio to stand for purity, righteousness and temperance. A. I. Root.

PATENTS

Practice in Patent Office and Court.
Pat. Counsel of The A. I. Root Co.
CHAS. J. WILLIAMSON,
McLachlan Bldg., Washington, D. C.

The Early Bird Catches the Worm

PLAN THE NEW SEASON NOW

Make up your list of supply needs and write us. It will pay you to order early and prevent later and possible unavoidable delays. We solicit your 1923 business on the basis of fair prices, quality goods and excellent service.

The A. I. Root Company of Iowa
Council Bluffs, Iowa

Seeing California From a Roadster.

Continued from page 782.

tance. The apples here are extremely large, entirely free from worms, fine-flavored, fair and uniform in size, and they are on the market practically the whole year.

From the town of Santa Cruz we turned toward the mountains and climbed a beautiful pass which took us miles along their ridge through stately redwood forests, which we could thoroughly enjoy on account of the safe and perfect road.

And then we came down into Los Gatos in the Santa Clara Valley. This is a wonderful valley for the deciduous fruits such as prunes, apricots and peaches, and every year thousands of visitors come for "blossom day." We drove through the miles and miles of orchards, many of which were receiving copious irrigation to help set fruit for next year, through San Jose and on through acres of truck gardens, through the Bay cities, so called, although to me they seem fused into one long city between the Berkeley hills and San Francisco Bay, and reached Berkeley refreshed and more in love with our adopted state than ever before. Next month I will tell something of our trip back through the inland route.

ROOT QUALITY SUPPLIES

BEES AND QUEENS.

Authorized Distributor for St. Louis district.
Send for Catalog.

O. G. RAWSON, 3208 Forest Place,
East St. Louis, Ill.

BEEKEEPERS' SUPPLIES.

The kind you want and bees need. Good stock of the A. I. Root Co.'s make of goods on hand. Catalog free. Beeswax wanted.

J. NEBEL & SON SUPPLY CO., High Hill, Mo.



BEE CANDY Just what you want to use when you pack your bees this fall. This candy will save many colonies that are short of stores. Put up in large paper plates just right for your hive. Send for circular and price, also catalog of supplies.

H. H. JEPSON

182 Friend Street.

Boston 14, Mass.

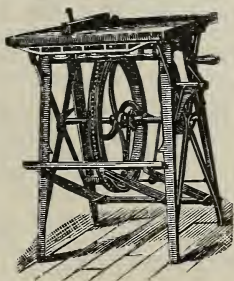
BARNES' HAND & FOOT POWER MACHINERY

This cut represents our combined circular saw, which is made for beekeepers' use in the construction of their hives, sections, etc.

Machines on Trial

Send for illustrated catalog and prices.

W. F. & JOHN BARNES CO.
545 Ruby Street
ROCKFORD, ILLINOIS.

INDIANOLA
APIARY COMPANY

Italian Bees and Queens, bright golden and 3-banded. Orders booked for season of 1923 as follows:

One-lb. package Bees with untested Queens, \$3.00; Two-lb. package Bees with untested Queens, \$5.00; Three-lb. package Bees with untested Queens, \$6.00. Ten per cent discount on orders of \$25.00 or more. Thirty years' experience, hundreds of satisfied customers. Your orders solicited, satisfaction guaranteed.

J. W. SHERMAN, Valdosta, Ga.



American Poultry Journal

Oldest, Largest and Best

4 MONTHS TRIAL 25 cts.

1 Yr. 75c 2 YEARS \$1 5 Yrs. \$2

Averages over 100 pages per issue—tells how to feed, house and breed; how to secure high egg production; how to hatch and rear poultry successfully. Established 1874. Only 25c for 4 mos. Stamps accepted. American Poultry Journal, 86-523 Plymouth Ct., Chicago



RAISE GUINEA PIGS

for us. We buy all you raise. Big profits—large demand—easily raised.

Pay better than poultry or rabbits. Particulars and booklet how to raise FREE.

CAVIES DISTRIBUTING CO., 3145 Grand Ave., Kansas City, Mo.

MASON BEE SUPPLY COMPANY,
Mechanic Falls, Maine.

From 1897 to 1922 the Northeastern Branch of The A. I. Root Company.

PROMPT AND EFFICIENT SERVICE

BECAUSE—Only Root's Goods are sold.

It is a business with us—not a side line.

Eight mails daily—Two lines of railway.

If you have not received 1922 catalog send name at once.

Wishing my many customers and friends a Merry Christmas and a Happy Prosperous New Year and soliciting your future correspondence and patronage.

INDIANOLA APIARY

VALDOSTA, GEORGIA

PATENTS

I make a specialty of patents, trade-marks and copyrights. Protect and profit by your ideas. Advice and terms on request. Eleven years' active practice before U. S. Patent office. Write today. Lester L. Sargent, patent lawyer, 524 Tenth St., Washington, D. C.

Our Guarantee and Advertising Conditions

Believing that all the advertisers in this journal are trustworthy, we make the following guarantee of our advertising, together with a statement of the conditions we must exact both from our advertisers and from our subscribers who may patronize such advertisers:

OUR GUARANTEE (subject to conditions here-in mentioned): We will make good to paid subscribers the loss of money that may be sent to any deliberate swindler or irresponsible advertiser by reason of any misleading advertisement that may be printed in our columns.

We will promptly discontinue the advertisement of any advertiser against whom a clearly valid complaint is made by a subscriber, and such advertiser will not be restored (if at all) to our columns until he has fully satisfied such complaint; furthermore, if we find that the facts sworn to in affidavit by the complainant and the circumstances warrant it, we will then not only exclude the advertiser from our columns, but at our own expense will proceed (by law, if necessary) to compel him to make restitution or to secure his proper punishment.

WHAT WE DO NOT GUARANTEE: We will not guarantee against bankrupts sanctioned by the courts. We will not guarantee the settlement of disputes between subscribers and honest advertisers, nor against loss and delay caused by honest advertisers who may be unable to fulfill conditions or contracts because of innocent misfortune or unfavorable conditions beyond their control. We will not guarantee any deal for bees and queens in which the purchaser advances the cash to the queen or bee rearer without an arrangement, either through a bank or express company, whereby the purchaser can examine the bees or queens upon arrival and before the cash is released to the shipper—wishing our subscribers to take the same business care we ourselves would take in making a deal for queens or bees and trusting our "cash in advance" to those only who we know by experience have an established record of honest business dealing. (In making this last condition, we in no way challenge the right and propriety of the honest, business-like, prompt queen or bee rearer to ask pay in advance, either the whole or part, for he is worthy of such confidence, has proved himself, and can secure orders on cash-in-advance terms. But the purchaser should know his bee or queen dealer, if he is to advance the cash, and if he does so it must be at his own risk—not ours.) We will not guarantee the purity of any seed advertised nor any nursery stock, as nurserymen ordinarily will not do this themselves; but any seedsman or nurseryman advertising in our columns will have given us excellent references in advance, and our readers may consider this fact in their favor. We will not guarantee advertisers more than one month after the last appearance of their advertisements in our columns. We will not guarantee temporary advertisers for "help wanted," "position wanted," nor advertisers of single sales or of small or second-hand articles, in which transactions the terms of bargain and payment are special and the purchaser can, by taking care, guard his own interests.

CONDITIONS INCUMBENT UPON OUR SUBSCRIBERS: In order that our subscribers may se-

cure the benefit of our advertising guarantee, in case of need to do so, they must mention in writing to advertisers that they are replying to an advertisement seen in *Gleanings in Bee Culture*. They must give notice of complaint against an advertiser within one month of the time of the transaction complained of, and only after having made written complaint to the advertiser in question; such complaint to us must be in the form of a sworn affidavit as to the facts set forth in the complaint, if the complainant wishes us to take up his claim against the advertiser; the right of examination of the article to be purchased before payment for it, must be demanded and made in all cases wherein the purchaser does not know to his full satisfaction the dealer of whom he is to purchase. Our subscribers will be solely responsible for the terms they agree to with advertisers and must use all reasonable caution and diligence in making such terms and in satisfying themselves of the conditions and quality of any article or commodity offered for sale.

CONDITIONS INCUMBENT UPON OUR ADVERTISERS: We reserve the right, at any time, to cancel any advertising contract and discontinue advertisement, and refund, pro rata, for space not furnished under contract. Every advertiser, unless well known to us and with an established record for honest and prompt dealing, will be required to furnish satisfactory credentials as to both character and financial standing, the endorsements of a local banker, postmaster and official, or three other endorsements equally as good, being asked for by us. Queen and bee rearers, who seek to advertise in our columns, must furnish not only satisfactory character and financial references, but must sign our Code for the Sale of Queens and Bees, answer our questionnaire as to their beekeeping and apicary conditions; and, if new in the business of selling queens and bees, must furnish us with the endorsement of at least five reputable beekeepers or a beekeepers' society, or give an indemnity bond, or furnish us with both the endorsement of beekeepers and bond. All advertisers must not only deal honestly, but they must follow correct business practice, be prompt in business correspondence and in the delivery of goods, or else expect to be barred from our advertising columns for such business delinquencies.

WHAT WE SEEK TO ACCOMPLISH: By this guarantee and its conditions we seek the accomplishment of two purposes: to drive the unreliable advertiser out of our columns and even punish him by law if he so deserves and it is possible to do it; to be relieved of the burden thrown upon us in the past by the unwise deals of our readers and unjust complaints against honest advertisers.

GLEANINGS IN BEE CULTURE.

The A. I. Root Co., Publishers.

The Co-operative Movement. — Contin'd from p. 771.

as dangerous to the life of a co-operative enterprise are: (1) No definite economic plan; (2) co-operation as a side issue; (3) co-operation attempted in isolated units; (4) lack of proper management; (5) association with politics of any kind.

A beekeepers' Utopia is still invisible in the sky through the most powerful telescopes. Patience, willingness to attempt something new, persistence and hard work alone can bring us nearer to the goal we seek. The door to producers is now open. Let us enter before it is too late.

Schoharie, N. Y.

LEWIS 4-WAY BEE ESCAPES



Four exits from supers. Fits all standard boards. Springs of coppered steel. Made of substantial metal. Price each, 18c prepaid. Made by

G. B. LEWIS COMPANY, Watertown, Wis., U. S. A.
For Sale by All Dealers.

ATTENTION

NORTHERN BEEKEEPERS

A MIGHTY INTERESTING PROPOSITION

VERY LOW PRICES

ON

NUCLEI AND PACKAGE BEES

FOR EARLY SPRING DELIVERY

Black bees with Italian Queens. Fine stock of Italians. No disease. Abundance of experience as shipper and receiver of bees insures the service you should receive. A postal brings prices and detailed information.

A. J. HEARD, BONAIRE, GA.

BEES TO CANADA

Package bees at reduced prices; highly bred Italian queens, leather-colored, three-banded stock; thoroughbred quality, prolificness guaranteed. I ship to various parts of the United States and Canada every spring; unsolicited testimonials and repeat orders prove satisfaction. My bees are healthy. Safe arrival or replacement or money refunded guaranteed. Shipments begin about April 15. Order early and be in time. Three-frame nuclei a specialty, and have shipped them safely for years, not only to northern, eastern and western parts of the United States, but also to Canada. Also shipped successfully to the Virgin Islands. Write for my catalog of special offer on three-frame nuclei and combless packages.

C. M. ELFER, ST. ROSE, LOUISIANA

HONEY

We just received several carloads of beautiful Honey. Roadside beekeepers and those supplying a family trade will do well to take advantage of these bargain prices:

In 60-lb. Tins—White Orange, 13c lb.; White Sage, 12c lb. Extra L. A. Sage, 10½c lb.


GLASS AND TIN HONEY CONTAINERS.

2½-lb. cans, crates of 100.....\$4.50
5-lb. pails (with handles) crates of 100.. 7.00
10-lb. pails (with handles), crates of 50. 5.25
60-lb. tins, 2 per case, new \$1.20 case; used 25c

WHITE FLINT GLASS, WITH GOLD LAC. QUERED WAX LINED CAPS.

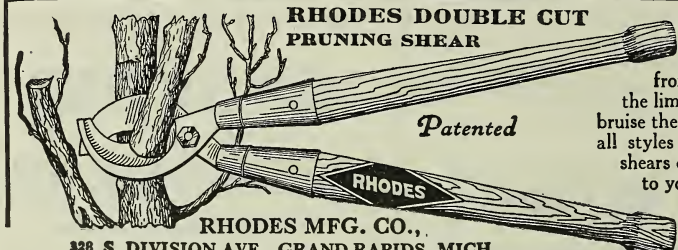
8-oz. honey capac., \$1.50 per carton of 3 doz.
16-oz. honey capac., \$1.20 per carton of 2 doz.
Qt. 3-lb. honey capac., 90c per carton of 1 doz.

HOFFMAN & HAUCK, INC.
Woodhaven, New York

KITSELMAN FENCE
GET IT FROM THE FACTORY DIRECT

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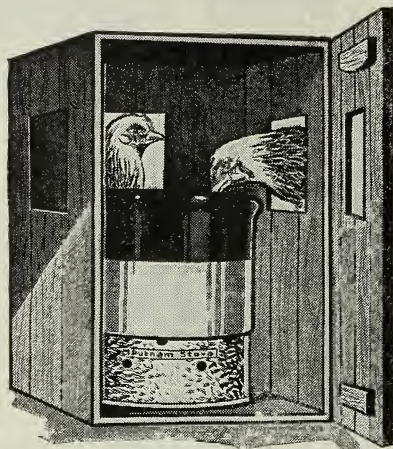
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F. L. Burleson is a beekeeper at Spear, N. C. Last May he ordered from the Norfolk branch of The A. I. Root Company a shipment of hives, supers and sections. This shipment was promptly made to Mr. Burleson at Spruce Pine, N. C., one of his shipping points, and his postoffice address, Spear, N. C., was also very carefully marked on the shipping crates.

The railroad company delivered the supplies at Spruce Pine, but neglected to inform Mr. Burleson at his home at Spear, that the goods had arrived and were awaiting him at the Spruce Pine station, 12 miles from his home. For four weeks the shipment remained there, and during this time Mr. Burleson repeatedly inquired of the railroad employees if his goods had been received at Spruce Pine station and was told they had not arrived. He then complained to The A. I. Root Company, and a "tracer" was at once put on trail of the shipment which was found to have been delivered at Spruce Pine a month previously.

To make a long story short: Mr. Burleson then got his much-needed

bee supplies, but had to pay the railroad \$2.21 overtime storage charges before the station master at Spruce Pine would release the goods to him. In writing to The A. I. Root Company, Mr. Burleson chanced to mention that he thought the storage charges were unjust. He did not ask The A. I. Root Company to take the case up with the railroad—but, our Company, unasked, did take the case up with the railroad officials. Our traffic manager, who is an expert in all shipping matters, wrote the railroad company a half dozen letters, presenting all his carefully gathered evidence of the railroad's neglect.

On October fourth, the Superintendent of Transportation of the railroad fully acknowledged its error, and paid back to Mr. Burleson the \$2.21 unjust storage charges.

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Index to Gleanings in Bee Culture

VOLUME L

In using this index the reader should not fail to note that it is divided into five departments, namely, General, Editorial, A. I. Root's writings, Contributors and Illustrations. The index of General includes everything except Editorials, Illustrations and A. I. Root's writings.

GENERAL.

- A**
- ADVERTISING** 771
 Differentiation in 771
 Methods of...21, 22, 532, 766
 Story-Telling in 767
 Agarita (see Honey Plants).
 Age Brings Wisdom, Bill
 Mellvir 168
 Alfalfa, Long Honey Flow of.....515
 Alfalfa Yields in the East...642
 Alighting-Board, Why Not
 Omit? 168
 Allen, Grace, Personal Letter
 from 783
 Alsike, Pollination of..... 231
 Aluminum Combs..... 237
- AMERICAN HONEY PRO-
 DUCERS' LEAGUE**
 Annual Meeting in 1923... 668
 Better Distribution, a Func-
 tion of 635
 Booklet on Laws..... 533
 Message from President of.....647
 Notes Concerning 778
 Officers of 173, 600
 Program of 712
 Treasurer's Report..... 173
- Ants, Circumventing in Flor-
 ida** 35
- APIARY**
 Choosing Site of.....368-371
 Observations About 223
 Richter's Plant..... 144
 Ridding, of Foul Brood..... 659
 Apiculture, Who's Who in.....321
 Apparatus for Lifting..... 21
 April, Important Things to
 Do in 250
 Artichokes as a Farm Crop..... 780
 August, Work of Beekeepers
 in 536
 Automobile Radiators, Honey
 in 167, 794
- B**
- Bacillus alvei, Relation of,
 to Abnormal Appear-
 ances** 299
Bacillus larvae, Cause of
 American Foul Brood... 300
Bacillus pluton, Cause of
 European Foul Brood... 299
 Bacteria, Functions of..... 298
 Bacteria, Nature of..... 298
 Berrels That Do Not Leak... 705
- BEE**
 Books, Rare, List of.....652, 653
 Escapes, Use of..... 509
 Moth, Work of Larvae of.....462
 Space Below Frames..... 154
 Tree, Saving Bees from... 667
- BEES**
 Age Beginning Field Work.....394
 Breeding, Suited to Local-
 ity 532
 Can Woman Keep?..... 777
 Carrying Out Brood..... 247
 Defense of 661
 Distinguish Colors 792
 Do They Injure Fruit?... 229
 Eaten by Chickens..... 37
 Energy Produced by 157
 How They Use Their
 Wings 793
 in Cellar, Noise Made by..... 797
 Infected, Fall Treatment
 of 645
 in Roman Mythology..... 160
- Locating 171
 Loss of, in Cellar..... 37
 Make Millions for Fruit
 Growers 226
 Moving 37, 39, 171, 599
 Native, in Africa..... 707
 Old, Eliminated in Fall
 85, 157
 Plenty of Stores for..... 39
 Preference in Blossoms
 Shown by 228
 Quit Working in Supers.....463
 Stingless, Mexican..... 776
 Suddenly Becoming Cross.....463
 Talking Them in Schools.....571
 Think 393
 Valuable for Pollinators
 227, 643
 Watching Flight of..... 223
 When to Buy..... 102
 Wonder work of..... 226
- Beeswax, Digging It From a
 Mine** 772
- Beekeeper, Virgil's, from Cor-
 ycus** 313
- Beekeeper, Young** 643
- Beekeepers Merchant a
 Friend to** 575
- BEEKEEPERS' ASS'N.**
 California 242
 Georgia 789
 Michigan 593
 Mississippi 165
 North Carolina 166
 Ohio 600
 Ontario 34
 Texas 163
 Value of Local 572
- BEEKEEPING**
 and Agriculture 229
 as a Sideline..... 26,
 90, 160, 240, 312, 384,
 452, 524, 586, 652, 717, 783
 Books 39
 Compared with Other Ag-
 ricultural Lines..... 721
 Helps Boys Through Col-
 lege 583, 646
 How to Start in..... 102
 in Africa 707
 in August 586
 in British Columbia..... 720
 in Guatemala 16
 in Ontario 711
 in Porto Rico..... 96, 244
 Migratory 436
 Not Exactly, But..... 443
 Profit in Backlot..... 155
 Two Schools in..... 439
 What It Can Do for Boys.....643
- Beginners (see Talks To).**
**Black Locust (see Honey
 Plants)**
 Blight, Cause of..... 229
- BOOKS AND BULLETINS**
 "Beekeeping in Clover Re-
 gion" 320, 396
 Dadant's "Langstroth on
 the Honeybee" 680
 How Obtained 39
 "Sweet Clover" 600
 Books on Bees, Rare..... 652
 Bottling Without Scum on
 Top 632
 Breeding and Requeening.....296
 Brood Carried Out by Bees... 247
- BROOD-CHAMBER**
 Large 699
 to Keep Free of Honey..... 247
- Waste Space in 700
 When Second Given..... 322
 Double, for Spring..... 319
- BROOD-COMBS**
 Evolution of Perfect..... 79, 157
 Examination of 250
 Stronger When Old..... 99
 Confusing Symptoms of... 299
- BROOD DISEASES**
 Dangerous Advice on..... 83
 Diagnosis of 38
 Specimens Where Sent... 38
 Variations in 298
- Brood-nest, Congestion of,
 Causes Swarming**..... 373
- Brood-rearing Suspended**
 100, 596, 664
- Buckwheat, Pollination of**... 230
- Bush-bonnet (see Honey
 Plants).**
 Buying Colonies in Winter.. 39
- C**
- CALIFORNIA**
 a "Melting Pot" 311
 Crop in 590
 Honey Week in..... 101
 Houses in 311
 Migratory Beekeeping in.....436
 Orange Locations 76
 Star Thistle Region of..... 307
 Seeing It From a Roadster.....781
- Northern** 92,
 162, 242, 314, 386, 590, 719
- Southern** 28,
 92, 162, 242, 314, 386,
 454, 526, 590, 654, 719, 785
- Cages, Queen, Filling**.....446
- Canvassing Consumers for
 Orders Filled by Retail-
 er** 707
- Capping, Not Done**..... 534
- CAPPINGS**
 Disposal of 304
 Percentage of Honey in.....374
 Pin Holes in..... 38
- CAPPING-MELTER**
 Heater for 517
 Use of 304
 with Corrugated Bottom.
 304, 381
- Carriers, in Shipping Comb
 Honey** 575
- Carrot (see Honey Plants).**
Cartoons by Donahey.....
 36, 168, 444, 641, 701
- Cell, Part of Base Covered
 by Larva** 394
- Cells, Kinds of** 250
- CELLAR**
 Bees Taken from..... 149
 Colonies in 3 Classes..... 150
 Door Left Open..... 797
 Loss in, Cause of..... 37
 Noise Made by Bees in..... 797
 Wintering in 598, 667, 680, 779
- Changes of Personell at Me-
 dina** 40
- Chickens Eating Bees**..... 37
- Choosing a Location**..... 368
- Clipping, Wings of Queen**... 250
- Clipping, Queen of After-
 Swarm** 322
- CLOVER**
 Red, Pollination of..... 231
 Sweet Pollinated by Bees.....233
 Yellow Sweet, Saves Feed-
 ing 155

- Moving Bees.....37, 171, 599
- N**
- Native Bees in Africa.....707
- NECTAR**
- Comes from Where.....230
- Secretion, Conditions Influencing.....368
- Secretion on High Altitudes.....792
- Secretion Varies.....170
- Net Weight Law in N. Y.....726
- Newspaper Advertising.....766
- Newspaper Method for Uniting.....666
- New York, Crop in.....787
- Not Exactly Beekeeping, But.....443
- Nuclei or Package Bees.....100
- O**
- Observations About Apiary...223
- ONTARIO**
- Beekeeping in.....711
- Crop in.....656
- Sweet Clover in.....656
- Orange Locations of California.....76
- ORANGE FLOW**
- Colony Manipulation During.....78
- Conditions of.....76
- Preparing for.....77
- Oregon, Crop in.....592, 663
- Out-Cluster at Morning.....645
- Outside Observation in Apiary.....223
- Overstocking an Apiary...370
- P**
- Package Bees or Nuclei...100, 171
- Package Bees, Two-Pound Record.....43, 167
- PACKING**
- Comb Honey.....513, 576
- Cases, Size of Entrance.....666
- Honey in Tin Pails.....634
- in Korea.....647
- Lack of Uniform Results in.....84
- Material for.....638
- Paper, Form for.....644
- Securing Chaff for.....532
- Simple Method of.....706
- Thickness of.....638
- When Removed.....322
- Packages, Tin and Glass.....632
- Pails, Tin, Packing Honey in.....634
- Paper Winter Cases.....639
- Parcel Post Packing Containers.....19
- Parks, H. B., Chosen Texas State Apiarist.....243
- Paste for Labels.....98, 642
- Pear Blight, Cause of.....229
- Peddling at Wholesale Prices.....779
- Pennsylvania, Conditions in.....722
- Pests of Rural Industries.....157
- Phillips, N. E., Extension Apiculturist of Pennsylvania.....723
- Pioneer Beekeeping.....438
- Plants Blooming in September.....596
- Plants, Migration of.....523
- POEMS**
- "The Farewell Song of the Bee".....26
- "On Trying to Write as Requested".....653
- "In Memoriam".....589
- "The Silences".....525
- "As Dreaming Must".....241
- "Greetings".....26
- "Homemaker Taken While at Work".....253
- "Gone Home".....255
- "November Memories".....718
- Pollen Not Needed for Winter.....99
- POLLINATION**
- Number of Colonies for.....247
- of Cotton by Bees.....233
- of Field Crops by Bees...230
- Stimulates Growth of Fruit Body.....23
- Porto Rico, Beekeeping in...96
- PRICES**
- Changeable.....698
- Folly of Cutting.....794
- How Determined.....568, 573
- Principles in.....568
- Retail, Wholesale and Jobbing.....568
- Stable, Preferred by Dealers.....773
- Standardization of.....574
- to Consumer, Retailer, Wholesaler.....648
- When Selling Locally.....584
- Propolized English Sparrow.....659
- Pullinger, Ada E., Student at Root Factory.....582
- Q**
- QUEEN**
- Cages, Filling.....446
- Clipped, Finding in Swarm.....323
- Clipped, Killed by Bees.....394
- Clipping Wings of.....250
- Finding.....250
- Head and Mouth Different from Workers'.....796
- Introduction.....517
- Laying Eggs on Side of Cells.....462
- Palace for, How to Build.....701
- Rearing, Simplified.....461
- Time for Development of.....598
- Traps, Using.....322
- Weight of.....394
- QUEENS**
- Age of Larvae for.....246
- Caged, Lose Fertility.....20
- Cataleptic.....377, 449
- Classes of.....462
- Importation of.....296
- Rearing.....531
- Two or More in Hive.....20, 463
- Wintering Two in One Hive.....598
- Queenless Colonies, What to Do with.....597
- R**
- Rabbits, Metal, Purpose of.....797
- Rea, Geo H., Takes Up New Work.....668
- Rearing Queens.....531
- Recipes.....383, 451, 651, 710
- Record, Good, Instance of.....391
- Records, Making.....369
- REQUEENING**
- Every Year.....297
- in European F. B.....323
- in Fall.....537
- in Swarm Control.....395
- Leaving It to the Bees.....531
- Reasons for.....293
- Simplest Method of.....298
- When and How Often.....298, 462
- Without Dequeening.....392, 462
- Rheumatism Cure, Mr. Midler's.....640
- Richter's Extracting Plant.....508
- Richter's Plant in California.....144
- Retailers, Co-operating with.....707
- Retail Package Made Attractive.....693
- Roadside Displays.....22
- Roadside Selling.....95, 104, 570
- ROBBING**
- Bees Tear Down Combs.....644
- Colony Being Fed.....642
- Means of Selection.....595
- Moth-Infested Colony.....666
- Root Company Changes.....40
- Root, Mrs. A. I., Tribute to.....24, 89
- ROYAL JELLY**
- Amount in Cells.....151
- Chemical Analysis of.....151
- Tremendous Growth Force of.....151
- Robber Cloth, Improved.....447
- Russian Pea (see Honey Plants).
- S**
- Salesmanship, Value of Good.....999
- Scott, Nina, Beekeeper.....777
- Scraping, Knife for.....514
- Scraping Table, Convenient.....513
- Sealing Honey at Season's Close.....462
- SECTIONS**
- Different Sizes of.....169
- Unfinished, Given Back.....465
- Weighing and Grading.....514
- SELLING**
- Locally 570, 584, 632, 648, 726
- More Through Booklets.....713
- National Organization Needed for.....635
- Retailer Helped in.....707
- Standardized Packages in.....573
- (See also Marketing.)
- Shade for Hives.....772
- Shed as Winter Protection.....680
- Shipping Cases for Comb Honey.....514
- Short Courses in California.....92
- Short Courses in Louisiana.....708
- Siftings, by J. E. Crane.....23, 89, 157, 237, 309, 381, 449, 521, 585, 649, 714, 780
- Signs, Display.....532
- Skyscrapers in Australia.....793
- Smoker, Fuel, Sumac Bobs.....23
- Smoker, Shield for.....460
- Smokers, Word About.....726
- Snow Closing Entrance.....99
- Sourwood, Uncertain Yields.....448
- Souring of Honey, Cause of.....463
- Spiders to Control Wax Moth.....519
- SPRAY**
- Lime-Sulphur Harmless.....169, 246
- Poison.....309
- When.....246
- Star Thistle, Region of California.....307
- Stings, How to Avoid.....249
- Stock, Chilean.....296
- Stock, Foreign.....296
- STORES**
- for Winter.....637, 664
- Lot Too Much.....384
- Natural, Wintering on.....236
- Provide Plenty.....39, 43, 177, 324
- Story, Second When Needed.....325
- Supersedure, Leaving It to the Bees.....381
- Super Lifter Handy.....445, 774
- Supering, Near Close of Honey Flow.....464
- SUPERS**
- Bees Quit Working in.....463
- Character of Honey Flow in Spring Bees.....394
- Comb, and European F. B.....394
- Device for Lifting off.....445, 774
- Kind for Beginners.....172
- Management of.....397
- Number of, Determined by Character of Honey Flow.....14
- Ridding from Bees.....509
- Shallow Extracting.....170
- What Size Preferred.....170
- Surplus, Failure to Store.....463
- SWARM**
- After, Clipping Queen of.....322
- After, Preventing.....322
- Losing Queen.....395
- SWARM CONTROL**
- Demaree Plan for.....395
- Gill's Plan.....378
- Modification of Demaree Plan.....377
- Never Failing Plan.....390, 449
- Put-up Plan for.....394
- Requeening in.....395
- SWARMING**
- Caused by Congestion of Brood-Nest.....373, 449
- Caused by Crowding.....372
- Caused by Old Queens.....372
- Control of.....375
- Empty Chamber Below to Prevent.....394

Excessive	452
Factor Always Present in	373
Field Bees Contribute to	373
Finding Clipped Queen in	323
Influence of Locality on	13
Instinct Sometimes Dor-	
mant	371
Many Causes Put Forth	371
One Way to Take Care of	381
Out, Swarm Newly Hived	322
Preparations Distinguished	
from Supersedure	323
Preventing Loss from	326
Problem of	325
Reduced by Keeping Bees	
Comfortable	399
Story of	326
Using Queen Traps in	322
When to Expect Further	
	323, 395
Young Bees Contribute to	372
Hiving	390, 452, 524
Looking for	223
Newly Hived, Swarming	
Out	322
Taking from High Trees	392
Sweet Clover in Ontario	656
SYRUP	
Feeding Cold	660
for Winter, How Made	665
How Fed	665
T	
Talks to Beginners, by Geo	
S. Demuth	
	39, 102, 171, 248,
	324, 397, 464, 536, 598, 664
Tank Pressure, Use of	526
Tariff on Honey	713
Time Factor, a Big One	144
Tons of Honey from Hubam	696
Tool, Two-in-one	98
Top-Bars, Thick, Objection-	
able	87

Aluminum Combs, Comments	
on	74
Aluminum Combs, in Experi-	
mental Stage	141
Automobile Radiators, Honey	
in	760
BEEKEEPERS	
Legislation Affecting	
	505, 629, 693, 694
Local Organizations for	694
BEEKEEPING	
Weather Forecasts for	693
and Good Roads	141
and Income Tax	221
Better Management in	143
New	143
Progress in	143
BEEES	
Destroying Old in Fall	74
Inverting Sugar Syrup	760
Prohibiting Importation of	
	293, 629
Samples wanted by Bureau	
of Entomology	434
Setting Out of Cellar	142
BOOKS AND BULLETINS	
"Heat Production of Honey-	
bees in Winter"	75
"Beekeeping in Buckwheat	
Region"	74
"Beekeeping in Clover Re-	
gions"	74
"Beekeeping in Tulip-Tree	
Region"	74
Brood-Rearing, Restricted	567
California, Wintering Prob-	
lem in	10
CELLAR	
Moisture in	761
Putting Bees into	694
When to Set Bees Out of	142
Chambers, Separate, for Food	630
Clover, Increasing Acreage of	73
Colonies, More than Last	
Year	142
Color Grades, Establishing	365

Top-Bars Thin, Non-Sagging	
	448, 521
TRANSFERRING	
from Standard to a Jumbo	246
from Tree, Good Results of	392
Yet Securing Good Crop	390
Tunnel for Winter Cases, Size	
of	796
U	
Uncapping Knife, Steam-heat-	
ed	305
UNITING	
Newspaper Method for	666
Peppermint Method of	659
Weak Colonies	597, 664
Previous to Honey Flow	323
Utah, Crop in	592
V	
Velvet Bean (see Honey Plants).	
Ventilator, Wooden	98
Vetch (see Honey Plants).	
Vitamines in Honey	153
W	
Wasp Nest Taller than Man	461
Watson, Lloyd R., Resigns	243
Wax Moth, Spiders to Con-	
trol	519
Weight, Net, Marking	520
Western Notes	451
West Virginia as a Honey	
State	390
Wheelbarrow as Super-Lifter	774
White, Gilbert, Beekeeper	652
Who is This Man?	97
Who's Who in Apiculture	
	321, 396
Willow (see Honey Plants).	
Willson, R. B., Goes to New	
York	467
Windbreaks for Protection	
	31, 665

EDITORIAL

Colorado, Winter Protection	
in	9
Comb Honey, Inferior Stock	
Reduces Value of	507
Combs, Aluminum	74
Combs, Problem of Better	74
Crop and Market Situation	
	565, 759
Crystallization of Syrup, Pre-	
venting	293, 629
Disinfecting Combs, Drugs	
for	759
Energy Produced by Bees	75
Feeder, Automatic	630
Feeder, Simplest and Best	
Winter	759
Fireblight, Bees Help to Con-	
trol	566
Food Chamber, a Labor-Saver	630
Foul Brood, Confusing Symp-	
toms Explained	293
Foul Brood, European, Pecu-	
liarities of	75
Foundation, Fastening to Sec-	
tions	365
Good Roads and Beekeeping	141
Harvest, What It Has Been	505
Harvest, What It Will Be	365
HIVES	
Disinfecting Without Char-	
ring	9
Double-Walled, Insulating	
Value of	565
How Moisture Escapes	
from	760
Is Moisture Detrimental in	761
HONEY	
as a Cosmetic	9
Fall, for Stores	629
Helping Grocer Sell	566
in Automobile Radiators	759
Market Conditions	
	565, 629, 759
MORE SOLD LOCALLY	
Production, Interest in	73
Hubam, for Winter Pasture	563

WINTER	
Cases, Paper	639
Cluster, Location of	596
Cluster, Seeing Inside of	794
Entrance to Hive	84, 639
Nest	35
Packing	638
Packing in Korea	647
Protection	84, 638, 665, 726
Size of Cluster for	664
Stores for	236, 637, 664
Young Bees for	664
WINTERING	
in Cellar	
	598, 667, 680, 779, 797
in Two Stories	
	100, 516, 599, 794
on Natural Stores	236
Outdoors in Ontario	660
Problem	636, 714
Strong Colonies for	637
Three Commandments in	659
Too Many Bees	85
Uncertainties, How Elim-	
inated	636
Weak Colony over Strong	
One	667
WIRING	
Jumbo Frames	167
Methods	79, 393
Wiring Vertical, Wavy Combs	
from	391
Woman, Keeping Bees	777
Wonder Work of Bees	226
Wood-Base Foundation	79-82
Wood, Dr., Beekeeper and	
Showman	717
Work That Counts	461
Wrench for Tight Screw Caps	660
Y	
Yield, Surplus per Colony	
	533, 799
Yields, Large in S. Dakota	792

Hubam, Knock, a Boost	9
IMPORTATION OF BEES	
Bill Against	293, 366
Danger of Indirect	365
Prohibiting of	222, 293
Through Mails Prohibited	293
Increase, How Made	433
Income Tax and Beekeeping	221
Inverting of Sugar Syrup	760
ISLE OF WIGHT DISEASE	
Bill Approved by Commit-	
tee	565
Bill Introduced	366
Bill Opposed	433
Bill Passed	629
Meeting to Consider	222
Labels, What Law Requires	
on	694
LAW	
Affecting Labels	694
Net Weight Stamping	505
Recent	693
League, Honey Producers'	
Officers of	505
Management to Prevent	
Swarming	294
Market Conditions	
	565, 629, 759
MILLER MEMORIAL FUND	
Appreciated by Mrs. Miller	
	566
Committee in Charge of	141
Contributions Reported	73
Miller Memorial Library, Do-	
nation of Books for	693
Miller Memorial Library, Lo-	
cation of	566
MOISTURE	
Condensed in Hives	
	11, 695, 760
in Bee Cellar	761
Paraffin Applied to Hive	
Parts	435
Planning Now for Next Year	434
Production, Useless Consum-	
ers in	567

Queen, Wonderful Record of...435
Queens, Their Disappearance
in the Tropics.....142
Requeening in July.....434
Selling, Helping Grocer in...566
Spray Poison Evil.....221
Statistics Wanted by Agricultural Dept.630
Stock, Inferior, Reduces Value of Comb Honey...507
STORES
Abundant to be Given....295

Amount Needed295
Fall Honey for629
Leave Plenty of434
Saving by Destroying Old Bees74
Shortage in Spring Takes Great Toll295
Sugar Syrup, Inverting of...760
SWARMING
Effect of Emerging Bees Upon365

How Reduced506
Management to Prevent...294
SYRUP
How Fed295
Preventing Crystallization of629
That Will Not Granulate...293
Weather and Nectar Secretion506
Wintering in Colorado.....9
Wintering in S. California..10

A. I. ROOT'S DEPARTMENT.

Advice to Young Couples...801
Apiary in Tree-top.....329
Aluminum Mending Solder...
.....403, 540
Alpena, Visit to.....603
Allen, Grace, Poem, Memorial to Mrs. Root.....253
Automobile Accidents Caused by Drunken Drivers...732
Artichokes...671, 673, 734, 736
Bennett, F. C., Letter from...43
BIBLE
Funny Things in.....669
Pitching Out of Window...800
Interesting801
Blueberries, Bulletin on...107
Blueberries in Florida...471, 542
"Bonnie Doon" on Chime of Bells734
BOOKS AND BULLETINS
Blueberries107
"Evolution at the Bar"...468
"Merrybanks and His Neighbor"604
"Poultry," Richardson's...604
"Bread, Casting on the Waters"669
"Carnival of Criminals"...733
Carver, W. C., writes on Blueberries471, 542
Charity for the Erring...602
Cliffell, C. D., Expert Mechanic469
Corey, J. G., Invents Smoker...175
Darwinism, Attitude Toward...468
Declaration of Independence Needed673
Demoniacal Possession, Examples of602
Diseases Due to Intoxication...733
Double Standard for Men and Women801
Dream, Not All a Dream...802
ELECTRICITY

Cars Moved by.....603
Cooking by329
Lectures on41
Wind176
Evolution, Book on.....423, 468
"Farm Journal," Kind Word from803
Flying Machines.....402
Ford Plant, Visit to.....538
"Give Us This Day Our Daily Bread"403
Goodhue, Geo. O., Visit from...252
Gospel Hymns, Longing for...401
Helianti671
"Homemaker Taken While at Work," Poem, Grace Allen253
HUBAM
in England.....107
in Florida253
in Iowa329
in Oklahoma.....107
Nitrate of Lime for.....604
Jewelry Store Opened....41
Kaiser, L. C.....469
Kresge, S. S.....538, 540
"Leap for Joy," When Persecuted670
Life Beyond, Taught in Bible...400
Living, High Cost of.....736
Mending Your Own Tinware403, 540
Mother's Influence400
"My Grace is Sufficient for Thee"601
Persecution, "Leap for Joy" in670
Portland Cement603
Potatoes, Success in.....670
Prayer Service at Factory...106
PRAYER, ANSWERS TO
Money Loaned by Goodhue...252
Saloons, Stopped.....327, 328
Smoker, Invention of.....175
Strike Settled.....106

PROHIBITION
Good Reasons for...732, 734
Triumph in Ohio.....808
World Eye-opener43
Recognition of Friends in Next World400
Restaurants, Good Meals at...736
Scientific American's Tobacco Ads106
Sibley's Farm, Visit to...734, 735
SMOKER
Giving Away174
Invented by Corey.....175
New Invention.....175
Starving Victims of Turks...803
Sunday School in Jail.....251
Sunflower for Stock.....672
Surgery, Modern, What Accomplished by802
Sympathy, Kind Words of...107
SYMPATHETIC LETTER FROM ALLEN, GRACE253
Rowe, H. G.....401
Potter T. Chalmers.....604
Weckesser, Christian.....402
Temptations, Joy in.....669
Temptations of Satan601
TOBACCO
Factory Rules Cause Strike...106
Father Gives Up.....105
Scientific American Ads...106
Transportation by Air Route...402
Turning-Point in Life.....800
Unconditional Surrender...800
WIFE
Death of42, 400
Homemaker and Mother...42
Meets His Future.....41
Price Above Rubies.....41
WINDMILL
Building Tower of.....470
Electric Power from.....176
Wiring469
"Ye Must Be Born Again"...802

ILLUSTRATIONS.

APIARY
Allen's, Tennessee.....
.....385, 452, 453, 525
Borton's, S. Dakota.....319
Wolfe's, Colorado.....768
Coolidge's, Ohio156
Destroyed by Foul Brood...379
Gill's, Utah516
Government, British Columbia720
Grapevine, Medina, Ohio...772
Guatemala16, 17, 18
Ideal Site of.....370
in Eucalyptus Grove.....369
in Indian Summer, November cover.
in Tree-top329
in Winter, January cover.
in Winter, February cover.
in Winter, March cover.
Infected with Foul Brood...380
Krouse's, Ontario711
Log-Gum, North Carolina...795
Matheson's, Florida.....35
Moving with Trucks...436, 437
on Platforms371
Powell's New Mexico.....97
Root's, Medina, Ohio.....772
Schimmoele's, Ohio727

Stocked from Small Hives...297
University of Wisconsin...152
Unprotected368
Swahn's, Wisconsin21
with Tarred Paper Cases...639
Apicultural Building, Ontario...712
Apple (see Blossoms).
Armstrong, James, at Field Meet662
Artichoke672
Basswood (see Blossoms).
Beauty and Bees, April cover.
BEES
Examined by Lady With-out Veil589
in Bedroom641
Learning to Fly225
on Alighting-Board224
BLOSSOMS
Apple, May cover.
Basswood, July cover.
Buckwheat, August cover.
Clover, June cover.
Cucumber595
Goldenrod, September cover.
Orange78
Brood-combs, Large700
Cage, Screen232
Cages in Position to Fill...446

California, Typical Sage Region of145
Capping-melter, Steam-heated304
Capping-melter, West's305
Car Not Properly Packed...576
Carton, Comb Honey.....514
Cellar, Doolittle's, New York...150
Cells, American Foul Brood...301
Cells, European Foul Brood...300
Cliffell, C. D.....470
Clover (see Blossoms).
Colonies in Pairs for Unit-ing795
Colonies, Migrating77
Comb, Shaking Bees from...465
Container, Ten-pound Pail...19
Crimping Machine, Quinby's...79
Cucumber (see Blossoms).
Doing Our Best.....36
Drones, Expelled from Hive...225
Elwood, P. H.....439
Entrance, during Honey Flow...225
Escape-Board, Putting in...466
EXTRACTING
House on Wheels.....445
House, Richter's.....508, 510
Room at Medina.....303
Filling with Syrup.....795

Feeder Pails, Holes in.....	795
Feeder Pails, Upside Down.....	795
FIELD MEET	
New Jersey	658
New York	662
Vermont	572
Food-chambers, Tiered up.....	727
Foul Brood, Treatment.....	580
FOUNDATION	
Bristol Board	80
Fastener, Williams'	154
Wire Cloth	79
Wood-base	80-82
Quinby Closed-end	15, 440
Goldenrod (see Blossoms).	
Gooseneck to Fill Jars.....	633
Hank Clears Stone Fence.....	444
Hernandez, L. E.....	704, 705
HIVE	
Carried Easily Though	
Large	662
Decoy	76
Hetherington-Quinby	14
Large	702
Lifter	445
Question Discussed	701
Chilian	297
Paper-packed	644, 645
Supported by Lifter.....	446
Two-story for Wintering.....	795
with Built-in Packing.....	638
Home of Constance Root Boy-	
den	522, 523
Honey Exhibit, California.....	699
Honey Exhibit, England.....	698
HONEY-HOUSE	
Bray's, Montana	148
Rabbitt's, Idaho.....	146, 147
Stark's, Idaho.....	148
West's, Idaho.....	147
Honeyland	767

HUBAM	
Field, Cut for Seed.....	764
Field, British Columbia.....	88
Field of	696
Hulling	763
Pollinated Racemes of.....	233
Root System of.....	763
Unpollinated Racemes of.....	233
Isle of Wight Disease, Mites	
of	234
Kaiser, L. C.	469
Knives for Scraping.....	513
Lake, Artificial in Australia.....	793
"Merry Christmas," Decem-	
ber cover.	
Morse, Josephine	312
Nucleus House, for 12 Nu-	
clei	298
Orange (see Blossoms).	
Orator, Know-it-all.....	168
PACKING-CASE	
Brick	647
for Eight Colonies.....	637
Quadruple	727
Snow Melting on.....	726
Stake Between Entrances.....	727
with Cover Attached.....	727
Pails, Popular Packages.....	634
Pettee, George, Young Bee-	
keeper	643
Pullinger, Ada E., Beekeep-	
er	582
QUEEN	
Cells	326
with Foot Against Sting.....	378
Rankin, D. F. and Sons.....	583
ROADSIDE	
Display	571
Display Case	22
Selling Booth	570
Sign.....	571, 594, 662

Robber Cloth, Improved.....	447
Root, A. I.....	705
Root, Mr. and Mrs. A. I.....	25
Scraping Table, Crane's.....	513
Selling Locally	584
Sibbald, H. G., at Field Meet.....	662
Shaking Bees from Comb.....	465
Shipping Carrier	514, 575
Shipping Case	514
SHORT COURSE	
Class, Louisiana	708
Class, Utah	515
Parade, Louisiana	709
Skyscraper	661
Skyscraper in New South	
Wales	793
Sparrow, Embalmed.....	659
Sting, Queen's Foot Against.....	378
Strainer, Cheese-cloth	304
Super-Lifter, Made from	
Wheelbarrow	775
SUPERS	
Arrangement of.....	397-399
Being Cleaned	727
Not Skyscrapers	727
Swarm at Decoy Hive.....	224
Swarm Returning.....	223
SYRUP	
Filling Pails with.....	795
Loading Pails of.....	795
Pails of, Inverted for Feed-	
ing	795
Tarred Paper Cap.....	706
Tool, Two-in-one	98
Top-bar, Sag-proof	448
Trays, Filled with Packing.....	706
Wasp Nest Big.....	461
Windbreak of Trees.....	727
Winter Cases (see Packing-	
cases).	
Winter Scene in Arizona.....	792

CONTRIBUTORS.

Aeppler, C. W.....	151
Allen Grace.....	26, 90,
160, 240, 253, 312, 384,	
452, 524, 588, 652, 717, 733	
Andrews, L. L.....	28,
92, 162, 242, 314, 386,	
454, 526, 590, 654, 719, 785	
Atwater, E. F.....	84, 97,
377, 391, 519, 582, 657, 722	
Arbuckle, H. B.....	306
Barnard, W. C.....	774
Barnhill, W. W.....	772
Bartholomew, C. E.....	
165, 243, 316, 458, 789	
Bartlett, I. D.....	31, 456, 528, 721
Bennett, F. C.....	660
Bigelow, E. F.....	644
Boggs, Newton.....	655
Bonney, A. F.....	461
Boon, W. C.....	390
Borton, O. G.....	319
Boyden, Constance Root.....	
24, 158, 238, 310, 382,	
450, 522, 586, 650, 715, 781	
Bray, R. A.....	21, 722
Bromfield, O.....	659
Brown, H. H.....	98, 584, 648
Brown, Jas. A.....	776
Buchanan, John	98
Buffum, G. H.....	518
Byer, J. L.....	33, 35,
83, 236, 318, 389, 459,	
527, 656, 702, 724, 779, 791	
Cameron, I. W.....	461
Campbell, S. M.....	792
Cannell, S.....	446
Clark, H. D.....	460
Clement, W. L.....	443
Cole, E. M.....	520
Coollidge, C. S.....	155
Crane, J. E.....	23, 89, 157,
237, 309, 375, 381, 449,	
513, 521, 585, 649, 714, 780	
Cutts, J. M.....	
94, 164, 167, 244, 389, 656	
Davis, E. C.....	
94, 244, 309, 315, 457, 790	
Demuth, Geo. S.....	

12, 37, 39, 99, 102,	
169, 171, 229, 246, 248,	
322, 324, 371, 394, 397,	
462, 464, 534, 536, 596,	
598, 636, 664, 666, 730, 796	
Desmond, G. G.....	707
Dickman, J. Clay.....	774
Dixie, Chad	792
Drury, J. B.....	723
Fabian, F. W.....	441
Fink, L. A.....	707
Fisbeck, J. H.....	319
Foot, G. H.....	532
Fowler, C. E.....	794
Fracker, S. B.....	511, 778
Gilbert, A. C.....	461
Gilbert, Geo.....	645
Gill, M. A.....	
96, 245, 378, 456, 515, 592	
Greiner, F.....	460, 520, 726
Grissensaur, Geo. J.....	793
Griffin, O. B.....	532
Hardin, Robert.....	776
Harmer, Walter.....	779
Harnier, L. S.....	645
Harrison, Geo. Jr.....	706
Hassinger, E., Jr.....	
30, 388, 529, 721	
Hedderick, L. J.....	660
Hefinger, A. L.....	35
Hendrickson, A. H.....	226
Hiratsuka, Yasuo.....	647, 661
Holloway, E.....	392
Holst, Axel.....	392, 461, 595, 792
Holtermann, R. F.....	699
Hutzelman, Dr. J. C.....	764
Hyde, W. G.....	392
James, H. C.....	532
Johnson, C. C.....	659
Kelty, R. H.....	593, 788
Kinzie, Chas. S.....	794
Kirk, S. E.....	460
Kirkpatrick, E. A.....	646, 777
Klein, Nic	794
Larsen, Geo. D.....	98
Latham, Allen.....	154, 234
Latham, C. J.....	595
Le Sturgeon, E. G.....	573

Livingston, T. W.....	33, 530, 789
Long, W. P.....	88
Lovell, J. H.....	595
Lund, E. A.....	391
Lund, John	642
Mace, S. W.....	726
Mackay, B. B.....	708
Martin, Thos.....	445
Mellvir, Bill	36, 158
Martin, W. J.....	166, 245, 458, 790
Mendleson, M. H.....	391
Millen, F. Eric.....	711
Miller, A. C.....	86, 307, 768
Miller, E. S.....	30,
387, 390, 529, 531, 655, 787	
Miller, S. E.....	19, 447
Morgan, E. A.....	661
Myers, H. M.....	
32, 167, 388, 457, 526, 787	
McCray, Doris	710
McMurry, H. L.....	379, 581
Norton, A. N.....	97, 392
Osborne, M. C.....	20
Ormond, J. V.....	164, 594
Palmer, Jos. E.....	794
Pangburn, W. S.....	
167, 317, 531, 655	
Parks, H. B.....	29, 93,
163, 243, 455, 528, 591, 786	
Parks, I. W.....	441
Pease, Claude M.....	308
Perry, L.....	387
Peterson, J. H.....	642, 660
Pettee, Edith	643
Pettit, Morley.....	87, 390, 517, 660
Philbrook, H. S.....	20
Phillips, Dr. E. F.....	234, 577
Place, G. H.....	98
Platz, Albin.....	794
Powell, E. W.....	448
Powell, J. W.....	97, 713
Raggatt, H. W.....	773
Rankin, D. F.....	583
Rea, Geo. H.....	
32, 317, 457, 528, 593, 722	
Reicker, C. T.....	167
Richter, M. C.....	76,
92, 144, 162, 171, 223,	

242, 296, 314, 368, 386,	Snodgrass, R. L.....155	Wheeler, A. M., Jr.....168
436, 508, 578, 590, 697, 719	Snyder, P. G.....	Wheeler, F. L.....659
Rickard, R. K.....532	.....96, 244, 530, 658, 791	Whitney, B. C.....794
Riedel, George.....16	Speer, Ocie.....642	Williams, W. S.....390
Root, A. I.....772	Stahlman, D. C.....445	Williams, R. J.....154
Root, E. R.....772	Sterner, E.....391	Willson, R. B.....95, 165,
14, 438, 575, 582, 632, 703	Stone, A. W.....390	245, 316, 594, 725, 726, 774
Root, H. H.....	Sturtevant, A. P.....298	Wilson, H. F.....21, 30,
79, 146, 302, 374, 568, 774	Stuart, D. ....307	318, 454, 591, 647, 712, 786
Rouse, S.....644	Sutton, J. E.....659	Williams, R. J.....154
Scullen, H. A.....	Thomson, Geo. M.....779	Winkler, E. A.....696, 762
29, 315, 387, 454, 531, 592	Taber, C. H.....661	Wolfe, C. H.....766
Sharp, H. ....391	Thompson, J. E.....532	Wolford, Wm. H.....770
Sheafer, R. C.....461	Townsend, P. N.....726	Woodward, D. L.....149
Sheppard, W. J.....86, 720	Turner, G. A.....659	Woodruff, W. E.....460
Skovbo, J. ....773	Volkofsky, A.....793	Yancey, J. D.....236
Slattery, J. J.....448	Vorhies, C. T..163, 315, 455, 654	York, G. W.....635
Smith, Jay.....95,	Ware, J. M.....392	
316, 377, 456, 517, 700, 723	Webley, Frederick.....255	

